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Monthly Message

Recently in *Country Life*, 24 September 1959, I read with interest an article entitled "Triumphs of Science in Agriculture." The story is extremely interesting and illustrates two well-known facts:

1. All the money in the world cannot buy an original idea, but in turn much of that money may be required for its full development; and,
2. A prepared mind is all important in grasping a new concept which at first may be fuzzy of itself but through development may later become clarified and explain processes long considered empirical, or may bring forth ideas that are worthy of further experimentation and development.

In 1839 John Bennet Lawes, aged 25, graduate of Oxford, was a country squire in Rothamsted, Hertfordshire, England. His curiosity was aroused as to why ground-up bones acted well with some soils but not with others. He began to experiment first in his bedroom with simple pot experiments, mixing bone dust and mineral phosphates with turnips, with negative results. He then brought his own manservant from Oxford to help him and the two of them converted his barn into a laboratory.

In the course of his education he had learned from chemistry that the addition of sulfuric acid to certain phosphates brought about a conversion to superphosphates. Taking this step he found that the resulting superphosphates, when used as a fertilizer, caused a very marked increase in growth of crops raised on this soil. This was the beginning of a tremendous step forward in agriculture. In 1843 he was joined by Joseph H. Gilbert in formation of the Rothamsted Industries. Agriculture has ever since been indebted to this simple experiment. No huge sums of money were expended, other than for Lawes's Oxford education.

This is but another example of the creative mind in basic research and later the need of funds for the flowering of full development.

Many such instances in medicine are well known but tend to be forgotten: Lady Mary Wortley Montagu with smallpox inoculation followed by Edward Jenner, vaccination, and now dried vaccine; Withering and foxglove; Pasteur and his fundamental discoveries on fermentation; Fleming and penicillin, to mention only a few.

Frank B. Berry

FRANK B. BERRY, M.D.
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The *United States Armed Forces Medical Journal* is a monthly publication of professional and administrative information for medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the United States Army, Navy, and Air Force invite members of the regular and reserve medical services, the professional consultants of the military departments, and other physicians and health scientists with an interest in Department of Defense activities to submit manuscripts for publication in this *Journal.*

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UNITED STATES

Armed Forces Medical Journal

The Army Medical Service School

Its History and Mission

COLONEL RAYMOND M. DUKE, MC, USA

IN FULFILLING ITS MISSION to render medical support to the combat branches of the U.S. Army, the U.S. Army Medical Service has contributed much to civilian medicine and medical education. The medical school of the University of Pennsylvania, the oldest in this country, came into being in 1765 largely through the efforts of Dr. John Morgan, whom Dr. William Shippen, Jr., soon joined. Later, both these physicians served as Director General of the Army Medical Service, a position that now carries the title of Surgeon General of the Army.

The U.S. Army Medical Service established the first school of preventive medicine in the United States, at what is now Walter Reed Army Medical Center. Army medical officers also founded the Library of the Surgeon's Office, U.S. Army, today the National Library of Medicine, and were responsible for establishing the *Index-Catalogue of the Library of the Surgeon-General's Office, United States Army*, still an invaluable reference source.

Army medical officers provided the first pharmacopeia in the United States, and Major General George Miller Sternberg, MC, USA, wrote the first American textbook of bacteriology. The Army Medical Service introduced vaccination into the United States; developed the present system of typhoid fever prophylaxis; worked out the purification of drinking water by liquid chlorine; proved that yellow fever and dengue fever are mosquito-borne diseases; and demonstrated how to fight epidemics all over the world. Today, the Medical Service continues to engage in research and medical activities of vital importance both to civilian population and to military forces.

Many of the advances and developments mentioned originated in 2

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medicomilitary institutions, both founded by surgeons general of the Army. In 1893, General Sternberg established the Army Medical School, known today as Walter Reed Army Institute of Research. In 1920, Major General Merritte W. Ireland, MC, USA, established the Medical Field Service School, now the Army Medical Service School. Since its founding, this school has been a center for establishing medicomilitary doctrine and training Medical Service officers in field medicine. The corollary training in disaster medicine, part of the school curriculum in recent years, is as essential—in this thermonuclear age—for civilian physicians as for medical officers.

Many activities of an Army medical department are similar to those of civilian medicine. Others are unique. The special responsibility of military medicine is the care of masses of men who are, or who may eventually become, victims of the trauma of war.

The special nature of military medicine was recognized by many early leaders of the U.S. Army medical department, but the credit for implementing the concept belongs to surgeon Jonathan Letterman, who as medical director of the Army of the Potomac revived and introduced into Army medicine the system of evacuating the wounded from the battlefield developed by Larrey in the Napoleonic Wars. This system is now used by all modern armies. Later, Colonel John Van Rensselaer Hoff, MC, USA, developed the concept that Army medical personnel are soldiers as well as physicians and must possess a knowledge of drill, military organization, tactics, and field operations for optimum performance of their duties.

General Ireland, as chief surgeon of the American Expeditionary Forces and as the senior medical officer on the staff of General Pershing in France, realized, well before the Armistice, that the medicomilitary knowledge gained at a high price in World War I would be lost unless steps were promptly taken to preserve and disseminate it. He believed that this could best be attained by establishing an educational center to serve as a nucleus for the training of all medical department personnel in field service medicine—training that, in the light of his wartime experiences, he knew was essential. He envisioned the school as a center in which early in their careers, medical officers could be taught in a practical fashion all elements concerned with the military aspects of their profession. His goals for the school have been more than fulfilled.

THE MEDICAL FIELD SERVICE SCHOOL

The Medical Field Service School was established on the military reservation at Carlisle, Pennsylvania, assigned to the Army Medical

Service on 1 September 1920. Formal authorization for the school was contained in War Department General Order No. 7, 10 February 1921,[1] and the name became official in War Department Circular No. 419, 23 December 1920.[2]

Carlisle Barracks, one of the oldest military posts in the country, was selected for the new school after General Ireland convinced the Secretary of War that the school was needed and the chosen site desirable. Carlisle Barracks was a sound choice.[3] For 40 years it had served as the Carlisle Indian Industrial School and its facilities were readily adaptable for Army purposes. The 29-acre reservation contained large schoolrooms; auditorium; shops for various mechanical arts; gymnasium; mess hall; barracks for about 750 men; homes suitable for officers' quarters; hospital; laundry; and central heating plant.

The first commandant of the Medical Field Service School was Colonel Percy Moreau Ashburn, MC, USA, who had served as commander of the Medical Officers' Training Camp at Fort Benjamin Harrison, Indiana, during World War I, and was experienced in the study of tropical diseases. All members of the first class, with the exception of a Cuban medical officer, were veterans of World War I.

The basic objectives of the school at Carlisle Barracks are still the objectives of the present-day Army Medical Service School: training medical personnel to recover wounded from the battlefield and to treat them rapidly and effectively with the means at hand. Every phase of these 2 basic elements of military medicine are studied as exhaustively today as they were in the first class at Carlisle Barracks, although in the first courses the faculty had to study along with the students.

The school at Carlisle Barracks originally consisted of 5 main departments: military art, enlisted training, hygiene, administration, and equipment and transportation. The first courses consisted of a basic 5 months' course for medical, dental, and veterinary officers of the Regular Army; a basic 6 weeks' course for National Guard and Reserve officers; an advanced course for medical department officers; and a course for noncommissioned officers. The first of these courses has since been reduced to 6 weeks and the second to 2 weeks; the third and fourth courses remain substantially unchanged. The school at Carlisle Barracks also provided a summer training program for officers of the Reserve and the Reserve Officers Training Corps.

When, in 1940, it became apparent that the United States would eventually become involved in World War II, the Army began the rapid mobilization that was to make it the most powerful fighting force in history. The Medical Corps expanded correspondingly, and

the Medical Field Service School had to gear its activities to meet new requirements.

Regular courses of instruction were discontinued, and short courses instituted to train as many medical officers as possible in the elements of field medicine in the shortest possible time. The President's declaration of an unlimited emergency on 27 March 1941 gave further impetus to speed of training, and the 5-month regular basic course became a refresher course of 1 month's duration. However, after several abbreviated courses had been conducted, it became evident that they had been shortened too much to permit adequate training of newly inducted and totally inexperienced medical officers. Beginning with the course of 2 September 1941, instruction was increased to 2 months, after 2 such courses, 6-week courses were substituted and continued until the end of the war.[4]

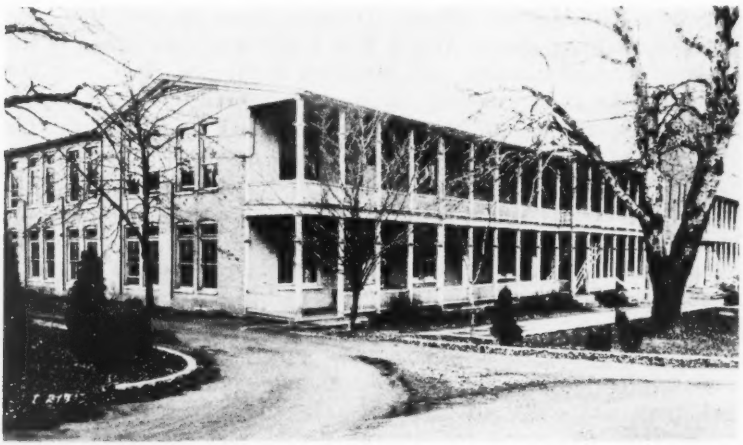

Figure 1. First academic building of Medical Field Service School at Carlisle Barracks. This structure was built in 1864, named Hoff Hall in 1926, and razed in 1940.

When mobilization began in 1940, it was necessary to expand training and housing facilities at Carlisle Barracks along with the expansion in instruction, to accommodate the increasing numbers of physicians being called into military service from civilian life. Fortunately, a building program had been in operation since 1938. After the major school building, Hoff Hall (fig. 1), was condemned in 1939, work on a replacement had begun, and this was rushed to completion at the start of mobilization.

Early in the war, the surgeon general realized that if professional medical responsibilities in the war effort were to be met satisfactorily, efforts of medical officers must be concentrated on purely professional duties. He solved the problem by ordering a large increase in the number of Medical Administrative Corps officers in the medical department. The personnel of this corps, established in 1920, had proved their value to the medical department by outstanding performance of many administrative functions associated with hospital and medical field unit operation, as well as with supply activities.

An officers candidate school for the Medical Administrative Corps was established at Carlisle Barracks as part of the Medical Field Service School on 1 July 1941, and 13 classes of candidates were graduated before the school was discontinued on 27 February 1943 because space and facilities were needed for the large numbers of physicians being ordered to Carlisle Barracks for the shortened basic course. A new officers' candidate school, opened at Camp Barkeley, Texas, in May 1942, provided for the training of Medical Administrative Corps officers during the rest of the war.[5]

Two activities of the Medical Field Service School at Carlisle Barracks deserve special comment. One was the equipment laboratory, which experimented with items of new equipment used in the treatment and evacuation of military personnel. The Carlisle first-aid dressing carried today by every soldier was developed in this laboratory by its first director, Major John P. Fletcher, MC, USA. Items such as tentage for field hospitals; electrical equipment; improved litters; field dental dispensaries; new ambulances and other vehicles for transporting patients; field x-ray equipment; a variety of other equipment for battalion aid stations; and much of the equipment used by Army medical personnel today was developed in this laboratory or can be traced to work done there.

The helicopter's potentialities for rapid evacuation of casualties from battlefield to hospitals where prompt and definitive surgical care was available was first demonstrated at Carlisle Barracks. The helicopter was used most effectively for this purpose both in the Korean conflict and in the Lebanon operation in 1958.

Another activity of the Medical Field Service School during its early days was publication of the *Army Medical Bulletin*, founded in 1922, for many years one of the principal means for providing Army medical officers with information concerning the practice of military medicine. Soon after it was established, it began to be used as an advanced training text, serving this purpose until publication of formal training regulations.[4] In October 1943 the *Army Medical Bulletin* became the *Bulletin of the U.S. Army Medical Department.*

THE ARMY MEDICAL SERVICE SCHOOL

During the war, the tremendous increase in the medical department's size placed great strain on the facilities at Carlisle Barracks. One of the most serious problems was lack of space for large-scale field exercises and demonstrations, an essential part of medical field training. Field exercises involving units larger than a battalion had to be conducted outside the post, along highways and on land leased for this purpose.

This was not desirable as a permanent policy, and, at the end of the war, when it became apparent that the Army would not be reduced to its prewar size for many years, a new and larger site for the Medical Field Service School was sought. Fort Sam Houston, Texas, centrally located among some of the largest military installations in the country, was selected. One particular attraction of the location for the Army Medical Service School was Camp Bullis, 15 miles from Fort Sam Houston, whose 30,000 acres provided terrain ideally suited for field exercises and demonstrations.

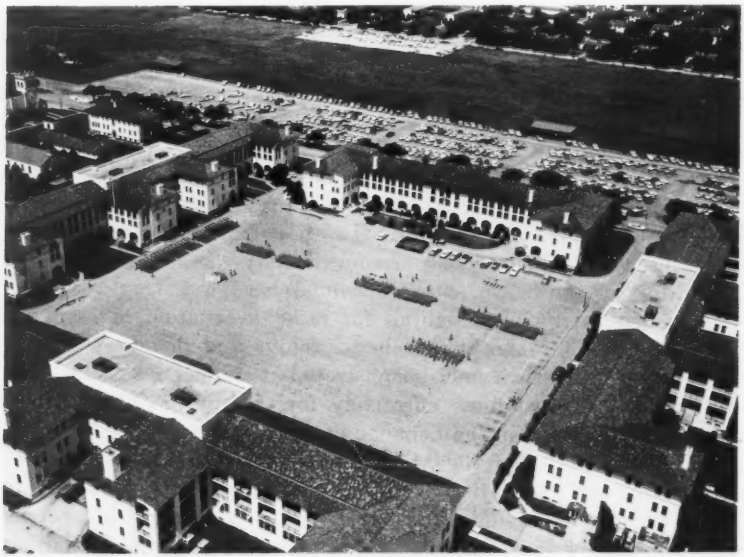

Figure 2. View of quadrangle and adjacent buildings housing headquarters and large number of classrooms of the Army Medical Service School, Brooke Army Medical Center, Fort Sam Houston, Texas. Newly commissioned Medical Service officers are engaged in their daily troop formations and drill.

ARMY MEDICAL SERVICE SCHOOL

The Medical Field Service School completed its move to Fort Sam Houston in the spring of 1946 (fig. 2), where, after several changes of name, it became the Army Medical Service School on 1 November 1955. As part of Brooke Army Medical Center, it is known today by this name to medical personnel all over the world. Brigadier General James L. Snyder, MC, USA, who assumed command of the School on 1 October 1959, is the present commandant.

Mission

Essentially the Army Medical Service School is no different from most colleges and universities in the United States in educational concepts and instructional methods, but its objectives and mission are quite different. In many respects they are strange to young men and women just entering military service, and they are not always understood by the public. Perhaps the simplest way to clarify the situation is to quote from the school's Manual of Organization and Functions: [6]

MISSION: Train selected Army Medical Service and other selected military personnel in the functions and responsibilities of the Army Medical Service as prescribed by law and regulations and to prepare and conduct instruction in accordance with approved doctrine for such selected personnel in:

a. Professional, administrative, technical, and military subjects as they pertain to the Army Medical Service.

b. The interrelationship of the Army Medical Service with other Department of the Army components and the other Armed Forces.

Act as an agency of The Surgeon General in the development and promulgation of Army Medical Service doctrine to include the principles and methods of Field Medical Service; and in the preparation, review, and maintenance of Army Medical Service training literature and instructional material.

Prepare instructional material for, and administer the Army extension course program of the Army Medical Service.

Participate in the development, testing, and modification of medical equipment and other equipment pertinent to the needs of the Army Medical Service.

Conduct research in matters pertinent to the field functions of the Army Medical Service.

Instruct, train, and test, when directed by the Department of the Army, eligible enlisted personnel for the purpose of selecting and classifying those candidates who are suitable for commissions in the Medical Service of the United States Army.

Prepare and furnish instructional material for the support of Army Reserve Schools.

Organization and Functions

An understanding of the organization of the school (fig. 3) and the functions of its major departments and offices is necessary to understand the ways in which the school fulfills its military mission.

Support and administrative functions. The administration and housekeeping necessary to support the programs and activities of the

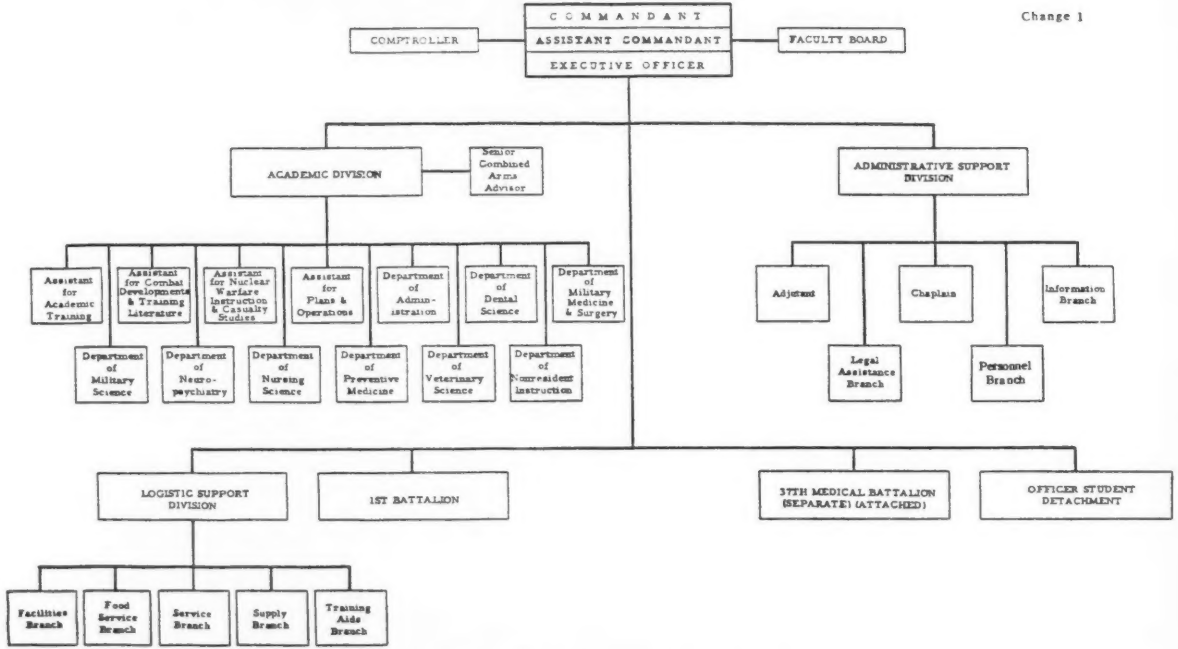

Figure 3. Organizational chart, Army Medical Service School.

Army Medical Service School are tremendous. In general, these tasks are accomplished by the Administrative and Logistic Support Divisions, which provide all services necessary to keep the school functioning smoothly.

The library facilities are of great importance in any teaching institution. The Stimson Library of the Army Medical Service School contains approximately 40,000 volumes, receives more than 300 professional journals monthly, and is equipped to meet almost any of the students' demands. Requirements which cannot be met locally can be provided by the Brooke Army Hospital Library and the National Library of Medicine.

Instruction at the school is not entirely formal classroom teaching, but is supplemented when feasible by conferences, practical exercises, and demonstrations. The 1st Battalion and 37th Medical Battalion provide most of the manpower for school activities. Demonstration company personnel occupy a position of special importance, for their skills make the activities of the school and the functions of its surgeons interesting and more readily comprehensible.

The Army Medical Museum was officially transferred to the Army Medical Service School in February 1955. An unparalleled source of information on items of historical significance to Army field medicine, its collection of field equipment includes items such as the surgical kits carried by medical officers in past wars, surgical instruments, models showing the various means of evacuation used in the past, and other mementoes of the Army Medical Service.

Department of military science. Instruction in the organization, tactics, and combat dispositions of the Infantry, the basic arm of the service, and of its supporting arms and branches is provided by the department of military science. Subjects covered include the principles of combined arms relating to offense, defense, and retrograde movements; tactical employment of nuclear weapons; survival procedures; military communications; map and aerial photograph reading; and other purely military elements of which all medical officers must have some knowledge. This department also conducts command and logistic exercises in both the classroom and the field at Camp Bullis.

The department also provides instruction for Medical Service officers in the organization, employment, and function of field medical units, including command responsibilities and functions of surgeons, and capabilities of the Army field medical service to support military operations such as amphibious, armored, and airborne assaults. In these courses, newly commissioned medical officers are given their first glimpse of their future activities and responsibilities in the Army.

In the field at Camp Bullis, young medical officers become familar with the operation of field-type hospitals, their capabilities for expansion, and the types of equipment provided in them. They also observe how surgeons and medical corpsmen use these facilities to care for large numbers of casualties.

Department of preventive medicine. The Army Medical Corps, a pioneer in the field of preventive medicine, has always maintained a keen interest in it. The department of preventive medicine at the Army Medical Service School provides broad instruction in epidemiology, entomology, sanitary engineering, and allied fields. Courses stress practical measures for preserving the health of the troops, in whatever area or climate military operations are being conducted, and the duties of preventive medicine officers at every level of command. This department also instructs enlisted men in medical laboratory procedures.

Department of military medicine and surgery. First organized in the Medical Field Service School in June 1941 to collect and evaluate information related to medical service in the field during combat, this department provides instruction in all types of field surgery, with special emphasis on débridement, new drugs, and new types of equipment used in prevention and treatment of trauma and disease in combat zones. Among the subjects covered are emergency medical treatment; prevention and management of shock, hemorrhage, and infection; principles and practices governing use of whole blood and blood expanders; medical care of the casualties of chemical, biologic, and radiologic warfare; use of anesthetics in the field; and technics of applying sutures, ligatures, splints, and dressings. Special emphasis is placed on various expedients possible in field medicine and surgery.

It is evident that young physicians need the type of instruction given them at the school. For example, 50 percent of newly inducted medical officers enrolled in orientation courses during 1955–57 had never performed—and many had not even seen—such a simple, life-saving procedure as tracheotomy.[7]

Invariably past wars have proved that death rates among the wounded in action can be correlated with the experience of the surgeons who treat the casualties. It is reasonable to expect that a similar pattern would prevail in the event of a mass civilian disaster. Combat surgery is best learned by combat experience, which is not available in peacetime. It is not possible to provide these young officers with an extensive surgical experience, even in débridement, but at least they leave the school with some awareness of clinical problems they will face in combat circumstances, and some first-hand knowledge of the most fundamental military surgical procedures.

Instruction in physical therapy and allied subjects and instruction of enlisted personnel in medical aid and operating room technics are also the responsibility of this department.

Department of neuropsychiatry. The department of neuropsychiatry provides instruction in aspects of neuropsychiatry of practical significance to the Army, including clinical psychiatric theory and practice; psychology of leadership; psychologic aspects of the management of the ill and handicapped; psychologic warfare; neuropsychiatric nursing technics; and psychiatric social work.

Department of dental science. Dental officers play an important part in Army Medical Service activities. The department of dental science provides instruction in the organization and functioning of all types of dental units, and the administrative, professional, and military aspects of the dental service, including the duties of dental officers at all levels of command, dental examinations and surveys, current types of dental field equipment, and approved methods for the management and splinting of jaw fractures in the field. Courses in dental technology for enlisted men are also conducted by this department.

Department of veterinary science. Here Veterinary Corps officers are instructed in prevention of transmission of the communicable diseases of animals to man, scientific inspection procedures for protection of troops from impure food of animal origin, and veterinary aspects of chemical, biologic, and radiologic warfare. Instruction is also provided in military and administrative aspects of Army veterinary service such as the types, organization, and functions of veterinary units and the responsibility of veterinary officers in civil affairs and military government.

Department of nursing science. Since the establishment of the Army Nurse Corps in 1901, Army nurses have helped to maintain the high level of medical care in the Army. Today, their many duties range from the traditional role as bedside nurses to assignments as teachers, public health nurses, anesthetists, ward supervisors, nurse administrators, and staff officers.

The department of nursing science helps train nurses on every level of experience for their future military careers. It is responsible for the orientation of newly commissioned Army Nurse Corps officers and for more advanced courses in nursing administration, ward administration and supervision, and neuropsychiatric nursing, as well as the training of enlisted men and women in nursing procedures and activities.

Department of administration. Today, Medical Service Corps officers function in many administrative areas that were formerly the responsibility of Medical Corps officers. However, because Medical

Corps officers normally assume command of the major activities of the Army Medical Service, it is necessary that they know and understand established administrative procedures. The department of administration provides instruction in such fields as management methods; medical records; hospital planning and maintenance; supply operations and procedures; personnel management; statistics and accounting; and medical and military law.

Office of nuclear warfare and casualty studies. This office has responsibility for the training of medical personnel in nuclear warfare. Its staff, all specialists in the medical effects of atomic weapons, investigates the effects of blast and thermal and ionizing radiation on combat and supporting troops under varying conditions, and conducts the course in management of mass casualties.

Office of combat developments and training literature. A program of increasing importance in the Army is the development and testing of new doctrine, organization, and equipment and their early integration into Army units. Personnel in this program, for all practical purposes, shape the Army of the future.

Thus, a major function of the Army Medical Service School is the development of new concepts and doctrine related to the organization, function, and employment of medical units in the field. This office coordinates all activities of the school in this area. It is also responsible for preparing training literature such as field manuals, technical manuals, technical bulletins, and other publications used for the training, information, and guidance of Army Medical Service personnel.

Department of nonresident instruction. Serial extension courses closely paralleling courses given at the school are offered by the department of nonresident instruction for personnel of the active Army and the Reserve. In addition, this department prepares instructional material used in support of the United States Army Reserve Schools program. At the present time, approximately 4,000 career and Reserve officers are enrolled in the Army Medical Service company and advanced officer courses, and in courses in combat psychiatry, military sanitation, and medical aspects of military law.

Curriculum

The Army Medical Service School has continued the role of the Medical Field Service School as the center of instruction in, and formulation of doctrine on, field medical service, but has advanced considerably beyond its original areas of responsibility. In addition to the orientation, basic, and advanced courses for medical personnel, all devoted to subjects of importance to career medical officers, the school

now offers a broad program of other courses of both medical and medicomilitary significance.

The various courses of instruction at the Army Medical Service School fall into 4 broad areas: medical service officer orientation and career courses, functional courses for Medical Service officers, courses designed to train officers for specific military occupational specialties (MOS), and postgraduate short courses for medical officers.

A list of courses conducted at the Army Medical Service School since its move to Fort Sam Houston in 1946 is shown in tables 1 and 2. A total of 2,143 classes were conducted and 111,216 students were graduated, in the period between 1946 and 1958.

Orientation courses. Physicians who have completed their internships, and recently graduated doctors of dentistry and veterinary science, take the Army Medical Service officer orientation course before their first military assignments. This 6-week course stresses such fundamentals as military law, the organization and methods of employment of the arms and services of the Army, field medical service, military medicine and surgery, diseases of military importance, and other subjects in which junior medical officers should be informed.

The same course is also given to officers who hold degrees in one or another of the sciences allied with medicine, such as chemistry, the biologic sciences, parasitology, and hematology. In a modified form it is given to newly inducted members of the Army Medical Specialist Corps (dietitians, physical therapists, and occupational therapists), and to Army Nurse Corps officers. Courses for nurses last 9 weeks, and for the Specialist Corps, 5 weeks.

Until recently, Medical Corps officers selected for residency training after they entered the Army were required to take the 22-week Army Medical Service company officer course. The requirement for this course has been eliminated, and officers selected for residency training now attend only the 6-week orientation course.

Medical Service Corps officers entering the Army formerly were required to take an orientation course lasting 12 weeks. Since 1 January 1959 the length of this course has been increased to 16 weeks.

Career courses. The 22-week advanced course for Army Medical Service officers is designed for those officers with between 5 and 12 years of commissioned service. The course is intended to train officers well advanced in their careers in the duties and responsibilities of commanders and staff officers of higher echelons of command.

Associated career courses of shorter duration are conducted for officers who are unable, for various reasons, to take the longer courses, or who are not eligible for them. Similar short courses are conducted for officers of the U.S. Army Reserve.

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Table 1. ***Officer courses conducted at the Army Medical Service School during period 1946–58***

Officer courses	*Number of classes graduating*	*Total number of graduates*	*Number of graduates by branch of service*							
			MC	*DC*	*VC*	*MSC*	*ANC*	*AMSC*	*Other*	*Allied**
Orientation Courses for Newly Commissioned Officers:										
Army Medical Service Officer Orientation Course	110	28,968	14,717	5,908	237	3,337	3,828	770	14	157
Medical Service Corps Officer Orientation Course	16	1,660	–	–	–	1,653	–	–	–	7
Preventive Medicine Orientation Course	5	112	82	–	–	19	–	–	–	11
Courses for Career Officers:										
Army Medical Service Company Officer Course	11	1,024	640	116	–	189	40	–	–	39
Associate Army Medical Service Company Officer Course	7	240	1	7	–	184	–	–	4	44
Army Medical Service Officer Advanced Course	13	1,037	185	96	15	637	44	4	–	56
Associate Army Medical Service Officer Advanced Course	13	478	11	22	–	312	3	2	2	126
Command and Staff Procedures Course	9	285	204	62	8	11	–	–	–	–
Hospital Administration Course	12	544	18	–	–	347	125	6	3	45
Medical Supply Officer Course	6	64	–	–	–	63	–	–	–	1
Hospital Food Service Administration Course	26	235	–	–	–	–	–	225	10	–
Ward Administration and Supervision Course	4	150	–	–	–	–	142	–	–	8
Advanced Nursing Administration Course	12	655	–	–	–	–	645	–	–	10
Neuropsychiatric Nursing Course	14	322	–	–	–	–	320	–	–	2
Military Neuropsychiatry Course	11	325	316	–	–	–	–	–	–	9
Clinical Psychology Officer Course	4	34	–	–	–	25	–	–	9	–
Clinical Psychology Refresher Course	1	12	–	–	–	12	–	–	–	–
Psychiatric Social Work Officer Course	2	20	–	–	–	10	–	–	10	–
Physical Therapy Officer Course	13	216	–	–	–	–	–	213	–	3
Occupational Therapy Officer Course	3	43	–	–	–	–	–	43	–	–
Physical Reconditioning Officer Course	10	115	–	–	–	104	–	–	10	1
Hygiene and Sanitation Course	1	37	–	–	–	37	–	–	–	–

Table 1. ***Officer courses conducted at the Army Medical Service School during period 1946-58*—Continued**

Officer courses	*Number of classes graduating*	*Total number of graduates*	*Number of graduates by branch of service*							
			MC	*DC*	*VC*	*MSC*	*ANC*	*AMSC*	*Other*	*Allied**
Courses for Career Officers—Continued										
Assistant Battalion Surgeon Course	7	482	–	–	–	482	–	–	–	–
Summer Training Courses for United States Army Reserve Officers:										
Army Medical Service Company Grade Officer Refresher Course	9	316	9	14	3	249	24	7	10	–
Army Medical Service Field Grade Officer Refresher Course	9	350	94	68	9	170	3	–	6	–
Postgraduate Professional Short Courses:										
Management of Mass Casualties	12	1,279	515	111	65	277	138	19	150	4
Institute on Nursing Service	3	173	–	–	–	–	173	–	–	–
Advanced Nursing	1	73	–	–	–	–	73	–	–	–
Army Nurse Corps Education Coordinators	1	49	–	–	–	–	49	–	–	–
Medical Supply Procedures	3	51	–	–	–	51	–	–	–	–
Totals	348	39,349	16,792	6,404	337	8,169	5,607	1,289	228	523

*Medical service officers of countries friendly to the United States.

Functional courses. The functional courses presented at the Army Medical Service School are designed to provide broad or refresher type training for Medical Service personnel who follow a specific career pattern. One of the most important of these courses is the command and staff procedures refresher course, which lasts for 2 weeks and is intended for field grade Medical Corps officers (major and above), whose primary duties in recent years have been professional and outside the areas of command and staff. Another course is the military nursing advanced course for members of the Army Nurse Corps. Lasting for 22 weeks, it provides—for relatively junior nurses who have demonstrated a potential for leadership—training in the duties and responsibilities of head nurses and nursing supervisors in military hospitals.

MOS courses. The majority of courses in the Army Medical Service School provide training to meet requirements for a specific military occupational specialty (MOS). They are designed for officers in all branches of the Army Medical Service and for selected

enlisted men and women. Upon completion of the course, the graduate is awarded a specific MOS designation, indicating that he is fitted to perform the job for which the MOS code was written.

Among the important MOS courses conducted at the school are: a hospital administration course for officers of the Army Medical Service, given in affiliation with Baylor University and terminating in the Master's degree; a 10-week course for medical supply officers,

Table 2. ***Enlisted courses conducted at the Army Medical Service School during period 1946–58***

Enlisted courses	*Number of classes graduating*	*Total number of graduates*	*Enlisted courses*	*Number of classes graduating*	*Total number of graduates*
Dental Laboratory Procedures (Basic)	152	2,739	Operating Room Procedures (Basic)	259	13,051
Dental Laboratory Procedures (Advanced)	2	12	Orthopedic Laboratory Procedures	23	130
Dental Assistant (Basic)	131	3,523	Occupational Therapy	18	300
Dental Assistant (Advanced)	2	9	Physical Reconditioning	14	854
Food Inspection Procedures (Basic)	13	369	Physical Therapy Procedures	22	343
Medical Aidman (Basic)	79	3,099	Preventive Medicine Procedures (Basic)	51	1,524
Medical Aidman (Advanced)	8	113	Preventive Medicine Procedures (Advanced)	2	18
Medical Specialist	312	28,722	Pharmacy Procedures	104	1,203
Hospital Technician	63	3,746	X-Ray Procedures (Basic)	150	2,677
Medical Laboratory Procedures (Basic)	153	4,106	X-Ray Procedures (Advanced)	2	13
Medical Laboratory Procedures (Advanced)	5	123	Medical Records Clerk (Advanced)	8	153
Neuropsychiatric Procedures (Basic)	79	2,664	Medical Supply Procedures	14	233
Neuropsychiatric Procedures (Advanced)	2	22	Medical Equipment Maintenance	46	708
Clinical Psychology Procedures	28	500	Army Medical Service Noncommissioned Officer	4	300
Social Work Procedures	30	521			
Electroencephalography Procedures	19	92	Totals	1,795	71,867

which provides training in the principles of item and financial accounting for medical supplies and equipment and in other subjects with which junior officers about to be assigned as supply officers must be familiar; and a course in physical therapy, which lasts for 49 weeks, 20 weeks of which are spent in training at the school, and the remaining 29 weeks in clinical training in selected Army hospitals. The latter course, limited to men and women with baccalaureate degrees in the biologic or physical sciences or in psychology, qualifies them to serve as commissioned physical therapists in the Army Medical Service.

Postgraduate short courses. The postgraduate short courses are similar to those given in university hospitals. The majority are

given at Army teaching hospitals and the Walter Reed Army Institute of Research, but several are given at the Army Medical Service School, including the course on the management of mass casualties.

This course, presented for the first time at the Army Medical Service School in February 1956, is now given 6 times a year to groups of 80 to 120 Medical Service Corps officers, civilian physicians, and allied personnel representing such agencies and organizations as the Public Health Service, the Federal Civil Defense Administration, the Council on National Defense of the American Medical Associa-

Figure 4. Field exercise at Camp Bullis, Texas. Members of an orientation course at the Army Medical Service School receive instruction in sorting mass casualties.

tion, the American Dental Association, the American Nurses Association, state public health departments, and a number of interested medical schools in various parts of the country. In addition to the Medical Corps' own specialists, instructors include well known specialists from both civilian and Federal medical services.

Subjects include the phenomenology and characteristics of nuclear weapons; effects (blast, thermal, and ionizing radiation) of nuclear

weapons on human subjects; numbers and types of casualties that may result from a nuclear bomb burst over a city or over armies in the field; collecting, sorting, and management of large numbers of casualties; experience gained in management of mass casualties from past civilian disasters; organization for disaster medical care; and procedures for the efficient utilization of personnel, supplies, and equipment.

During the course, students observe a field exercise, OPERATION BLOW UP, a vivid and realistic portrayal of a nuclear weapon detonation presumed to have created approximately 1,000 casualties among troops (fig. 4). Participants in the course have the opportunity to collect, sort, evacuate, and manage casualties from the earliest period following the detonation until the casualties are brought into a treatment center.

Most of the hundreds of young physicians who enter the Army each year serve the required 2 years and then return to civilian life. This group can—and must—contribute greatly to the communities in which they practice should a disaster, whether caused by enemy attack or natural forces, result in mass casualties. The training and experience given them at the Army Medical Service School and during their 2 years of military duty provide the Army Medical Service with its greatest opportunity to contribute to civilian preparedness in the event of a national disaster.

Other School Activities

The Medical Education for National Defense (MEND) program was instituted in the fall of 1952, with 5 pilot medical schools. Today, 55 schools have accepted the obligation to teach fundamental concepts of military and disaster medicine and solutions being developed to meet these problems.[8] The program was first directed by Dr. James R. Schofield, assistant dean of the Baylor University College of Medicine, a former student and an instructor at the Army Medical Service School. As national coordinator, he was able to create the essential rapport between affiliated medical schools and the Departments of the Army, the Navy, and the Air Force, without which the program could not have advanced as it has. The present national coordinator of the MEND program is Captain Bennett F. Avery, MC, USN.

A number of spaces at courses and symposia of special interest to the MEND program have been made available to participating schools. During periodic orientation tours through Brooke Army Medical Center, representatives of the MEND schools have seen

demonstrations of training aids used by the school and methods employed in the instruction in field medicine of new medical officers. The School has also provided MEND schools with recognized authorities from among its faculty as speakers in such fields as combat surgery and nuclear medicine.

The Army Medical Service School assists citizen soldiers of the U.S. Army Reserve by making its facilities available for Reserve units which come to Fort Sam Houston for summer training, and has frequently extended its facilities and loaned its specialists to other government agencies as needed. Representatives of the Federal Civil Defense Administration, for example, have visited the school to test certain items of civil defense equipment. During the past several months, the 200-bed Civil Defense Emergency Hospital was tested at the school and changes were made as the result of recommendations by school personnel.

CONCLUSION

The requirements of the medical service of a peacetime army are quite different from those of a wartime army, and newly commissioned medical officers and other medical service personnel must learn many things if they are to function efficiently with a military force in combat. Special technics and procedures must be utilized in the care and treatment of casualties, and medical personnel must be familiar with emergency first aid treatment, sorting of casualties, evacuation plans and procedures, and medical and surgical care in emergency hospital facilities.

The primary mission of the Army Medical Service School is to provide the necessary training in the special field of military medicine. It was for this purpose that the Medical Field Service School was established at Carlisle Barracks 39 years ago, and during the 25 years of its operation there, it graduated thousands of medical and medical administrative officers, who served the Medical Department and the country with efficiency and honor. Their contributions in every theater of operations during

Figure 5. Coat of arms of the Army Medical Service School.

World War II are now being recorded in the volumes of the official history of the Medical Department. Without benefit of the training in field medicine that they received at this school, their capacity to render competent medical service to combat forces during World War II would have been greatly reduced.

Since 1946, the objectives and traditions of the Medical Field Service School have been carried on by the Army Medical Service School at Brooke Army Medical Center, Fort Sam Houston, Texas. Many medical officers who functioned during the Korean conflict had their training there, and many others have been trained there since.

Essentially the same plans, technics, and procedures taught at the Army Medical Service School have been adopted by the many civil defense organizations in the United States. Each year the hundreds of young physicians, dentists, veterinarians, nurses, and enlisted medical technologists who have been trained at the school end their 2 years of Army service and return to civilian life, in which their knowledge will be sorely needed in the event of mass casualties.

Thus, the Army Medical Service School has made, and is continuing to make, contributions to national defense and to medical preparedness for possible disaster. Thus, too, it is fulfilling its own primary mission as set forth in the motto on its coat of arms (fig. 5) and on the badge that is worn by the staff and faculty of the school: To CONSERVE FIGHTING STRENGTH.

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Vision in the U.S. Armed Forces

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THE ABUNDANCE OF DATA available in industry and the Armed Forces makes it increasingly evident that the visual capacity of military personnel can be an efficient yardstick in determining rate and military occupational speciality (MOS) placement for optimum performance. The proper utilization of visual skills will promote efficiency, safety, economy, and morale.

It is the purpose of this paper to highlight several important visual problems encountered in the Armed Forces, and to propose specific recommendations for their correction.

MILITARY AND INDUSTRIAL OPHTHALMOLOGY

The military ophthalmologist should be more than just the eye physician and surgeon for active duty and retired military personnel and their dependents. Many times, definitive eye care for active duty personnel does not end with the period of active treatment; the personality of the man, his rate and duty, and his safety in the performance of duty may also be an important part of his eye care. The military ophthalmologist should, therefore, be an industrial ophthalmologist, concerned with the prevention of eye disease and injury, and with the proper placement of personnel according to their visual capacities.

Since World War II, there has been a great impetus in industry toward applying the proper medical standards for employment of workers. Employment examinations permit intelligent placement of employees—a process of matching the skills and physical characteristics of workers with their jobs.[1] They are thereby enabled to perform their work more efficiently, more happily, and with greater safety to themselves and to others. Management also profits by labor's more efficient output and is more protected in disability compensation cases.

From U.S. Naval Hospital, Oakland, Calif.

Of all the modern methods available to management for placing employees, adequate measurement and classification of visual performance are near the top of the list. With the use of an adequate visual program, management can discover more exactly where employees, as well as applicants, may be fitted into any industrial effort.[2] The importance of vision and its proper utilization is shown by the fact that 80 percent of all impressions come through the eyes; thus, in the interest of the health, safety, and efficiency of workers, the proper utilization and conservation of this sense must be given great consideration.[3] Hogan[4] pointed out the importance of testing visual functions: (1) to evaluate the ability of employees to perform work; (2) to correct defects in order to avoid fatigue; (3) to prolong a high degree of efficiency; (4) to prevent accidents to employees and fellow workers; (5) to detect defects that might prevent later compensation difficulties; and (6) to reveal hitherto unrecognized disease. These represent the fundamentals of a visual screening program.

When the visual requirements of a job are known, each employee can be placed where his eyesight skills can be best used.[5] When the employer sets standards for a particular task, based on his knowledge of its requirements, the medical personnel assures him that these standards are met by the employee; this is known as "selective job placement,"[6] or as a "job profile."[2] Brandaleone and Friedman[7] used a "PULHES," similar to that required by the military, for preemployment and periodic medical examinations for transportation workers. Their minimum ratings vary with the job; that is, an E–4 classification would disqualify a driver, but the same visual capacity would not be E–4 for a clerk or a dispatcher.

Visual performance deserves careful consideration in accident prevention as well as in job placement. It is agreed that among workers whose visual skills are adequate, accidents are fewer.[8] That safety is an important factor is illustrated by the fact that about 300,000 eye accidents occur each year in industry,[9] and of all industrial accidents, 3 percent are eye injuries.[10] It is estimated that 90 percent of these industrial eye injuries are preventable, provided that proper eye protection devices are used.[11] Herbine[12] concluded that every job in a plant should be studied and occupations requiring eye protection outlined. In no branch of medicine is the superiority of prevention over cure more obvious than in ophthalmology, especially in regard to trauma.[13]

Naval Civilian Personnel Instruction 190.10 includes an outline of the visual requirements for various jobs coming under the scope of the "Sight Conservation Program for Civilian Employees." This program has 4 goals: (1) to eliminate eye injuries; (2) to eliminate

accidents resulting from faulty vision; (3) to increase production and eliminate waste caused by defective vision; and (4) to improve morale. It also provides eye hazard determinations for areas, processes, and occupations, along with regulations for eye protective devices.

Many of the visual tasks in the Navy are no different from those in industry.[14] Thus, since industry has learned that the worker's eyes must be protected and since programs exist for civilian employees of the Government, why should there not be such a program for the soldier, sailor, and marine? At the present time in the Armed Forces, there are minimum visual requirements for the service academies, Reserve Officers Training Corps (ROTC), Officer Cadet School (OCS), and aviation and submarine programs. In the Navy and Marine Corps, certain aviation, submarine, and diving enlisted rates have visual requirements, but the vast majority of Navy rates and Marine Corps military occupational specialties (MOS) have none. For most enlisted personnel, there are only the minimum visual requirements outlined by Army Regulation (AR) 40–503 for induction,

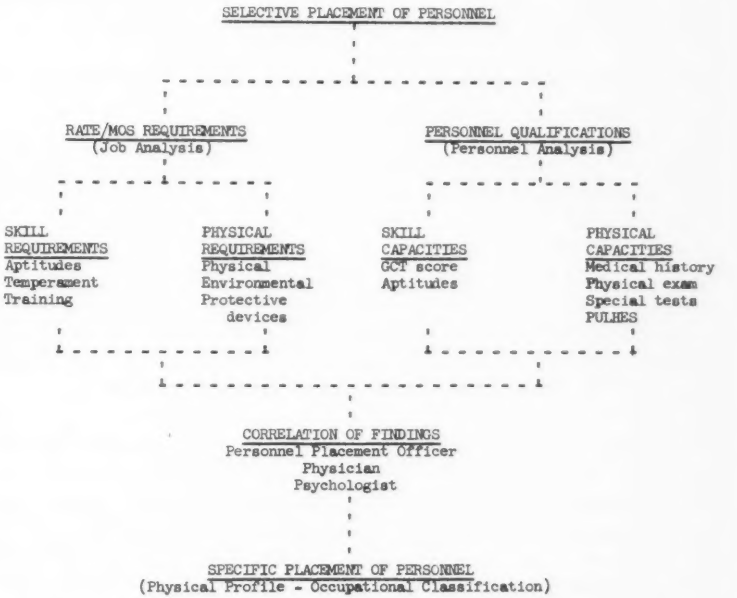

Figure 1. A scheme for developing a "physical profile-occupational classification" for the selective placement of personnel. (Modified after McFarland[17])

and the assignment of a physical profile (PULHES). No correlation exists between the physical profile and the type of duty assigned.

Vail[15] stated that a combat soldier without his glasses is in many cases as much a casualty as if he were wounded. He also stated that with a maximum uncorrected vision of 20/60 in each eye a routine soldier is capable of useful and active service. In industry, this same vision appears to result in no loss of working or earning ability.[16] An uncorrected vision of 20/60 in each eye (equivalent to a −1 sphere refractive error) could well be used as a base line to profile military personnel into line, combat, deck, and similar rates and MOS's. Those with an uncorrected vision of below 20/60 might well be profiled into noncombatant, supply, administrative, or other nonhazardous rates and MOS's.

Figure 1, modified after McFarland,[17] illustrates the formulation of a physical profile-occupational classification scheme that could be used by the Armed Forces. A complete record of a man's visual findings at the time of induction would allow him to be "job profiled," that is, his visual capacity matched to the various demands of a rate or MOS. This scheme, in the complete form, could be applied to the full PULHES of the individual, and not to vision alone.

THE INDUCTION EYE EXAMINATION AND THE PHYSICAL PROFILE E–3 AND E–4

At the present time Army Regulation (AR) 40–503 sets forth the minimum physical standards for induction and the physical profiling of personnel in the Armed Forces. Needless to say, this induction physical examination should be complete, and carefully carried out. However, with regard to the eye examination, Pinkerton[18] felt compelled in 1954 to present a paper entitled "A Plea for the Best Possible Preinduction Physical Examination" before the American Academy of Ophthalmology and Otolaryngology. It is urged that all medical officers of the Armed Forces read and profit by this paper.

During the Korean conflict, Pinkerton studied a group of 2,457 consecutive air-evacuation eye patients returning through Hawaii. Thirty-six percent were being returned for eye defects totally unrelated either directly or indirectly, to combat injuries or service, and 21 percent of the entire group were grossly and obviously unfit for overseas duty. He estimated that over 6 million dollars was wasted in training these men for duty overseas.

Table 1 presents 18 active-duty patients seen at this hospital over a 15-month period from May 1958 through July 1959, who had disqualifying "existed prior to enlistment" (EPTE) eye defects and who

Table 1. ***EPTE cases separated from the Service for disqualifying eye defects during a 15-month period***

Case	*Age (years)*	*Rate or rank*	*Months of service*	*Ocular diagnosis*
1	20	SA	4	Keratoconus, bilateral
2	23	AT-3	18	Retinitis pigmentosa
3	24	SN	8	Retinal detachment, OS
4	22	SA	7	Superior altitudinal hemianopia, bilateral, post-traumatic
5	18	SN	23	Left esotropia with amblyopia; refractive amblyopia, OD
6	18	SA	8	Left esotropia with amblyopia; refractive amblyopia, OD
7	18	SA	3	Refractive amblyopia, OU
8	25	ENS	18	Retinitis pigmentosa
9	18	FA	11	Myopia, OU
10	24	FN	9	Diplopia; deficient elevation and depression, OS; orbital fracture
11	19	FN	10	Keratoconus, bilateral
12	19	FN	24	Myopia, amblyopia, OU
13	25	AN	12	Myopia, amblyopia, OU
14	19	RM-3	30	Left esotropia with amblyopia; refractive amblyopia, OD
15	19	PVT/USMC	12	Diplopia; right hypertropia
16	19	SN	30	Optic atrophy, OS
17	19	PFC/USMC	15	Myopia, OU
18	19	PFC/USMC	11	Keratitis, chorioretinitis, bilateral, luetic

were separated from the service without disability. Several case histories from table 1 are presented to illustrate significant problems.

CASE REPORTS

CASE 4. A 22-year-old seaman apprentice with 7 months of service was admitted to this hospital on 1 August 1958, complaining of headaches. The history revealed that at age 17 he suffered loss of consciousness following a fall, and that neurosurgery was performed. Since then, he had been aware of a superior field defect. He had been evaluated at another hospital in July 1958, but was returned to duty.

The ocular examination was completely within normal limits except for lateral-gaze nystagmus and a bilateral superior altitudinal hemianopia. Skull roentgenograms showed bilateral posterior parietal burr holes. Neurosurgical consultation revealed no other abnormalities and a psychiatric consultation reported an "emotional instability reaction."

Comment. The induction history form should have been fully evaluated and skull roentgenograms obtained at the induction station.

CASE 5. An 18 year-old married seaman with 23 months of service was admitted to this hospital on 11 August 1958. The patient complained of poor vision in the left eye. During the previous 6 months aboard ship, he had experienced dizziness and blackout spells, requiring short periods of hospitalization in March and April 1958.

The VOD was 20/60 with $+6.25-4.50 \times 90=20/30$; VOS was 20/400 with $+6.75-1.00 \times 45=20/400$. A small left monocular esotropia was present. Psychiatric consultation reported an "emotional instability reaction."

Comment. Ophthalmologic consultation should have been obtained by the recruiting station prior to induction.

CASE 9. An 18-year-old fireman apprentice with 11 months of service was admitted to this hospital in December 1958, received as an air-evacuation patient. He had been admitted to the sick list aboard an aircraft carrier in October 1958, with complaints of right eye pain and periodic blackout spells, and of breaking his glasses frequently. He was considered to be a hazard aboard ship without his glasses, was transferred to a hospital in the Philippines, and then evacuated.

The VOD and VOS were 5/200, each correcting to 20/20 with a -5.00 sphere. The ocular examination was totally normal otherwise. Psychiatric evaluation gave him a diagnosis of an "emotional instability reaction."

Comment. This man should not have been inducted with an uncorrected vision of less than 20/400 in each eye [AR 40–503, para. 20a(3)].

CASE 11. A 19-year-old fireman with 10 months of service was admitted to this hospital from a destroyer in April 1959. He had been aware of poor vision in the left eye since the age of 8, and during the previous year had noticed decreasing vision in the right eye. He was inducted in Idaho where an "irregular astigmatism" was noted. At boot camp, at a training school, and at a dispensary this was again noted, but he was not referred to an ophthalmologist until seen by a third refractionist.

The VOD was 20/20, VOS 20/400. Retinoscopy, the Placido disc, and slit-lamp examination revealed a marked keratoconus OS, and early OD.

Comment. Civilian ophthalmologic consultation should have been obtained by the induction station in Idaho, or the first refractionist should have referred him for a complete ophthalmologic evaluation.

It appears significant that 11 of the 18 patients had associated psychiatric problems that may have been directly related to the EPTE ocular defects. However, it must be stressed that these individuals were separated from the service because of their disqualifying ocular defects.

Mangelsdorff [19] pointed out that in World War I, when total rejection of draftees amounted to 21.3 percent, eye defects constituted 5.34 percent, the second highest cause. In World War II, with total rejections amounting to 30.2 percent, eye defects constituted 4.9 percent, the ninth cause. In his extensive review of employment in a chemical plant, eye defects constituted 10.49 percent, the fourth highest cause, primarily for unilateral loss of vision, a hazard in handling chemicals. He stressed that even in times of peak loads, the same care and screening of applicants should be maintained, particularly in borderline cases. Inaccurate and incomplete physical examination records may lead to

disability and lifelong compensation for an antecedent condition, and the lack of accurate records of vision prior to an injury may lead to many hours of work to offset a false claim.[20]

There *must* be a distinction between "testing eyes" and "examining eyes," [21] at the induction center, boot camp, or training school. The importance of this complete eye examination is made most significant by the fact that in the Korean conflict 8.1 percent of all casualties were eye injuries.[18] All medical officers, optometrists, and corpsmen should be aware of this distinction, so that the visually handicapped person can be assigned to a duty or MOS at which he will not jeopardize himself or others. Strict adherence to existing standards, and a complete induction physical examination with an accurate record thereof protect the individual as well as the Government. At the induction station, boot camp, or training school, the borderline, questionable, or problem vision cases should be referred immediately to an ophthalmologist at a military hospiral; or in isolated areas, consultation should be obtained from a civilian ophthalmologist.

The careful placement of persons handicapped in any way can reduce our manpower shortage and give many more persons an active and useful life's work. The preplacement physical examination should consider not only the type of work to be done but the hazards involved in performing that job, thereby effecting the maximum and safest utilization of personnel.[19] This "selective placement of personnel" can be utilized by the Armed Forces to great advantage.

UTILIZATION OF ONE-EYED PERSONNEI

One-eyed personnel fall into 2 groups: those with a long-standing handicap that developed during childhood, and those who have recently developed unilateral blindness or who have had an enucleation of one eye. It is believed that both of these groups present specific problems in regard to proper utilization by the Armed Forces.

It is generally agreed that after the loss of vision in one eye, there is a period of complete inability to judge distance.[22] Until the person has adapted himself in the matter of monocular skills, he should not perform certain jobs. These problems are different from those encountered in cases of long-standing or congenital uniocular blindness.[22]

Duke-Elder and Whittkower[23] stated that men who have lost an eye struggle against social prejudices and against emotional difficulties within themselves. Abnormal psychologic reactions are present in about 78 percent, although the psychologic effect is out of proportion to the actual physical disability. These monocular persons are unreasonably preoccupied by the possibility of total blindness, and have

Table 2. ***Recent enucleation cases***

Case	*Age (years)*	*Rate*	*Years of service*	*Eye*	*Cause*
19	43	MMC	22	OS	Keratitis and secondary glaucoma
20	19	SN	2	OS	Phthisis bulbi, blunt trauma
21	43	MMC	20	OS	Choroidal melanoma
22	20	SGT/USMC	2½	OS	Lacerated globe
23	31	AD-1	11	OS	Keratitis and secondary glaucoma
24	21	A/2C, USAF	1½	OS	Lacerated globe
25	34	ADC	17½	OS	Chronic uveitis and secondary glaucoma
26	19	PFC/USMC	1½	OS	Lacerated globe
27	20	SGT/USMC	3½	OS	Lacerated globe
28	22	FN	3	OS	Lacerated globe
29	21	SN	3½	OD	Lacerated globe
30	18	SN	¼	OD	Lacerated globe
31	54	TM-1	18	OD	Lacerated globe

functional symptoms in the remaining eye; this may impair their working efficiency. Blank[24] and Grove[25] also have stressed the psychologic aspects of the problem.

There is a motivational difference between those in industry who have lost an eye and those who have their own business or profession;[26] thus the employee presents a greater problem in rehabilitation and job placement. Rehabilitation is the right of the injured[27] and resettlement in a suitable job is very important even though after the period of adjustment that follows the loss of an eye there is a negligible loss of efficiency in most vocations. Some[28] have even recommended a mandatory period of adjustment after enucleation of a previously good eye before permission is given to drive an automobile again.

From May 1958 through July 1959, 13 enucleation cases were managed medically or administratively at this hospital (table 2). Some of the problems present can be best illustrated by several case reports.

CASE REPORTS

CASE 20. A 19-year-old seaman with 2 years of service was injured aboard a destroyer in June 1957. Two days after injury he received definitive care for lacerations of the left lids, conjunctiva, and globe; 3 weeks afterward, the left globe was enucleated because of a beginning phthisis bulbi. He was received by air evacuation at this hospital in August 1957 and 1 month later a plastic revision of the left lower fornix was performed. The patient was to be evaluated for a heart murmur but went AWOL and was declared a deserter in December 1957. He was declared a deserter again in May 1958 and was readmitted in June of that year. Psychiatric consultation reported an "acute situational maladjustment." With an E–4 and S–4 profile the patient appeared before a Physical Evaluation Board (PEB) but was returned to duty in August 1958. Repeat psychiatric consultation reported a "neurotic depressive reaction." In October 1958, the patient was medically retired by the PEB, 16 months after injury.

Comment. Administrative confusion, unnecessarily long hospitalization, and the failure to evaluate the enucleated eye patient as a whole individual—all contributed to the total nonrehabilitation of this young man.

CASE 25. A 34-year-old chief aviation machinist mate with 17½ years of service, sustained a penetrating injury to the left eye in April 1957 with resulting blindness. Periodic bouts of redness and pain occurred and in October 1958 an enucleation of the left eye was performed. The pathologic report showed no evidence of sympathetic ophthalmia. An excellent ocular prosthesis was fitted. The patient was given case-hardened protective lenses and was returned to duty in December 1958.

Comment. This patient made an excellent recovery and adjustment, and is performing his old duties without difficulty.

CASE 28. A 22-year-old fireman with 3 years of service sustained a lacerated right globe while on liberty in May 1957. Immediate enucleation was performed. In October 1957 he was temporarily retired by the PEB; after being at home on indefinite leave for 9 months, he was recalled to duty. He was admitted to this hospital in December 1958 following an acid burn to his normal left eye, sustained while checking a battery at an air station. The left eye healed well with a vision of 20/20. A permanent right prosthesis was fitted and case-hardened lenses were obtained. In January 1959 the patient was returned to duty by the PEB, but in June, higher authority ordered him to be medically retired.

Comment. Administrative confusion in not considering the whole individual, his motivation, and type of duty, resulted in 15 months of nonfunctioning, nonhospitalized duty prior to the eventual retirement of this patient.

CASE 30. An 18-year-old seaman with 3 months of service sustained a rifle wound in the right zygomatic arch area, exiting through the right eye and lower lid, on 18 May 1959. An enucleation of the right eye was performed with plastic repair of the lower lid. The patient made a good recovery from the injuries but developed a marked "passive dependency reaction," as reported by a psychiatrist.

Comment. Of what value to the Navy is this seaman with 3 months of service who has psychiatric problems subsequent to the loss of an eye?

A poll of naval and former naval ophthalmologists conducted in March–July 1959 posed the following question: Is an active-duty enlisted man qualified for duty after having one eye surgically removed? The responses of 82 ophthalmologists are tabulated in table 3. From this table it may be observed that 55 were of the opinion that enucleation patients should be returned to a "limited or qualified duty" status, as opposed to 17 who believed they should not be returned to duty at all. Only 10 made no comment concerning

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Table 3. ***Poll of 82 naval and former naval ophthalmologists***

Question: Is an active-duty enlisted man qualified for duty after having one eye enucleated?

Status	*Active duty USN, USNR*	*Retired USN, USNR*	*Former USN*	*Inactive USNR*	*TOTAL*
No duty	5	3	1	8	17
Duty	3	2	2	3	10
Limited or qualified duty	10	5	8	32	55
Comments on limited or qualified duty:					
Evaluate the individual case					25
No hazardous duty					22
Should have a desire for duty					18
Experience value to the service					18
Change rate/MOS					16
No combat duty					13
Length of service					13
Lack binocular vision					13
Require adjustment time					7
Administrative, clerical, and supply rates/MOS's					5
Retrain					4
Safety glasses					4
Satisfactory prosthesis					3
Good service record					2

Table 4. ***Recent unilateral blindness cases***

Case	*Age (years)*	*Rate or rank*	*Years of service*	*Eye*	*Cause*
32	21	BT-2	3	OS	Fracture, optic foramen
33	28	FP-1	9	OS	Intraocular foreign body, and retinal detachment
34	22	SN	2½	OS	Retinal detachment, traumatic
35	24	EM-1	5	OS	Retinal detachment, inflammatory
36	25	SGT/USMC	10	OS	Aphakia, traumatic
37	20	SN	2½	OD	Subluxation lens, and secondary glaucoma
38	22	SK-2	3½	OD	Retinal detachment, traumatic
39	21	MM-3	2	OS	Cataract, traumatic
40	30	AM-1	9½	OS	Retinal detachment, inflammatory
41	24	AD-2	5	OD	Retinal detachment, inflammatory
42	19	SA	1½	OS	Optic neuritis
43	31	AM-2	11	OD	Cataract, traumatic
44	22	AM-3	3½	OD	Cataract, traumatic
45	24	AM-2	4	OD	Aphakia, traumatic
46	20	SN	3½	OS	Cataract, traumatic
47	27	SN	9	OS	Vitreous hemorrhage, traumatic
48	31	BM-2	10	OD	Herpetic keratitis
49	29	SGT/USMC	7	OS	Retinal detachment, inflammatory
50	27	MM-3	4	OD	Choroidal rupture, macular
51	51	CDR	26	OS	Keratitis, traumatic
52	19	AN	2	OS	Cataract, traumatic
53	18	SN	1	OS	Vitreous hemorrhage, traumatic
54	20	SN	2	OD	Macular hole, traumatic
55	17	SN	¼	OD	Choroidal rupture, macular
56	22	SN	3½	OD	Macular hemorrhage, traumatic

a specific type of duty for these patients. Of the 55 ophthalmologists who favored a return to a "limited or qualified duty," nearly one half recommended that each case should be individually evaluated prior to a definite decision being made concerning duty status.

From May 1958 through July 1959, 25 cases of recent unilateral blindness were managed medically or administratively at this hospital (table 4). Some of the problems present can be best illustrated by several short case reports.

CASE 40. A 30-year-old first class aviation metalsmith with 9½ years of service was admitted to this hospital on 23 August 1958 by transfer from an overseas hospital. The patient had previously been treated for an acute toxoplasmic chorioretinitis of the left eye with good results, but subsequently developed a retinal detachment, which was treated surgically. The VOD was less than 20/400 with a $-3.75-2.75\times07=20/20$; the VOS was light perception only. The vitreous of the right eye had many old floaters and the left eye had a total retinal detachment with a 2+ beam and cell in the anterior chamber. The Feldman-Sabin dye test for toxoplasmosis was positive in a titer of 1:256.

CASE 49. A 29-year-old Marine Corps sergeant with 7 years of service was readmitted to this hospital on 17 November 1958. He previously had been admitted and treated for a chorioretinitis of the left eye. It was the opinion that he had a cysticercus infection and the area was treated with diathermy. The VOD was less than 20/400 with a $-5.00\ -1.00\times30=20/20$; the VOS was light perception only. The left macula was elevated and cystic. The previous diathermy scars were well healed. On observation, it appeared that the macular cyst was enlarging, and on 8 February 1959 this was treated with "light coagulation" with good result. Concurrently he developed a marked anxiety reaction, manifested by multiple somatic complaints and mood changes.

Comment. The patients in cases 40 and 49 were identical with regard to their visual status, blindness of one eye, and marked myopia of the "good" eye. Also, both were trained and experienced personnel. The former was returned to full duty as a metalsmith; the latter was medically retired.

CASE 53. An 18-year-old seaman with 1 year of service was admitted to this hospital on 11 March 1959, following a nonpenetrating injury to the left eye. Hyphema was present, with a black fundus reflex. Secondary glaucoma developed and did not respond to medical treatment. Paracentesis of the anterior chamber was performed. Three weeks after injury, the anterior chamber was clear and the intraocular tension was normal. However, the VOS was light perception only, due to the presence of a massive vitreous hemorrhage; the VOD was 20/20.

Comment. Could this seaman be a hazard to himself and to his shipmates, and a liability to the Government, if no consideration is given to the type of duty assignment?

CASE 55. A 17-year-old seaman with 3 months of service was admitted on 20 April 1959, following an injury to the right eye from blunt trauma. Hyphema

was present on the right. When this resolved, a large choroidal rupture was observed, extending through the macula, with a resultant VOD of 20/400; the VOS was 20/20.

Comment. The patient was returned to duty by higher authority without regard for occupational reclassification. Should this seaman, with only 3 months of active service, have been "job profiled"?

It seems significant that 6 of the 13 enucleation cases (table 2) and 13 of the 25 cases of recent unilateral blindness (table 4) developed varying degrees of psychiatric and motivational problems. These allied problems may preclude their being returned to duty.

In the job placement of one-eyed persons, careful consideration must always be given to occupation and working environment as possible sources of danger to the good eye (table 2, case 28). Also, the person should not be placed in a position where his own visual defect might expose others to any increased risk. Industry is learning that the worker's eyes must be protected,[25] and uniocular persons should wear unbreakable lenses even if there is no refractive error.[29] Naval Civilian Personnel Instruction 190.10 states that a one-eyed person is considered as engaged in eye-hazardous work regardless of his occupation and shall wear protective eyeware at all times.

Duke-Elder [30] pointed out that about 20 percent of all cases of uniocular blindness are due to occupational injuries and that the most common type of hazard consists of flying particles. Thus, it would appear foolhardy to place one-eyed personnel in jobs or areas where hand tools or abrasives are used, or where grinding or metalwork is being performed; also, the same consideration should be applied to occupations involving chemicals, explosives, welding, engineering, and construction.

Secretary of the Navy Notice 5312 of 13 March 1959 states that civilian employees will be given full opportunity for re-employment or transfer to other suitable jobs following injury; and if necessary, vocational rehabilitation services will be utilized to every practical degree to prepare the handicapped employee for other suitable work. Hanman [31] suggested that a physically handicapped worker is no longer occupationally handicapped when he can fulfill the requirements of a *suitable* job.

When an employee suffers an injury, he feels that the employer should take care of him. He is not interested in the technicalities of commission or court procedure, for he knows only that he has a disabling injury and he is concerned solely with the care and compensation provided during the time of disability. Early evaluation of a disability insures the elimination of uncertainty on the part of the

patient, a speedier recovery, and an earlier return to work.[32] Recently, Spaeth [33] reported on a scale for use in the estimation of the loss of visual efficiency.

RECOMMENDATIONS

1. The induction physical examination should be complete, and borderline or questionable cases should be referred for specialist evaluation prior to induction.
2. All E–4 cases should be discharged on an EPTE basis as soon as discovered, to avoid compensation problems, in the interest of safety to the individual, and for the protection of the Government.
3. At all boot camps, training schools, and major military hospitals a "physical profile-occupational classification board" should be established, which would perform a selective placement of personnel or would "job-profile" personnel who are partially handicapped following disease or injury.
4. From an enlisted classification of ratings or an enlisted MOS manual, each rate or MOS should be "job profiled" by analyzing (a) the type of duty to be performed, (b) the hazards involved in duty performance, and (c) the visual requirements of that duty.
5. A minimum uncorrected visual acuity of 20/60 in each eye, correctible to 20/20, might be used as a base line to profile personnel into enlisted deck, ordnance, engineering, construction, aviation, and submarine rates, and line combat MOS's; others, into administrative, supply, medical, and support type rates and MOS's.
6. All E–3 cases should be "job profiled" and given a suitable rate for maximum utilization and safety.
7. Personnel with the loss of or recent blindness of one eye should be completely and individually evaluated before a decision is made on duty status.
8. Case-hardened prescription safety lenses, even if they are plano for the only seeing eye, should be issued to all one-eyed personnel.

SUMMARY

At the present time, the Armed Forces have a system for the physical profiling of personnel, but have no means for correlating this with the demands of the various rates and MOS's. A scheme is presented for the development of a physical profile-occupational classification. The correlation of visual capacity with the duty to be performed will promote efficiency, prevent accidents, improve morale, and utilize

manpower maximally. This scheme, in the complete form, could be applied to the full PULHES of the individual, and not to vision alone.

By the establishment of a "physical profile-occupational classification board" at all boot camps and training schools, a new trainee could be selectively placed in a suitable rate or MOS. This Board, acting on the findings of a complete and accurate physical examination, would also be a check to help eliminate those not physically qualified. A group of EPTE cases discharged from the Service is presented, illustrating the waste involved by their improper evaluation.

The establishment of a physical profile-occupational classification board at all major military hospitals would assist in the reclassification and rehabilitation of personnel who are partially handicapped following disease or injury. It is stressed that a physically handicapped individual is no longer occupationally handicapped when he can fulfill the requirements of a suitable job.

In the utilization of "one-eyed" personnel by the Armed Forces, special problems are considered. One-eyed personnel of long standing can be efficiently utilized by profiling into suitable "one-eyed" jobs. Those who have recently developed unilateral blindness or have had an enucleation of one eye subsequent to disease or injury should be individually and fully evaluated prior to a decision concerning duty status. A group of recent cases of unilateral blindness and enucleation is presented, illustrating the magnitude of the problems. The motivation for duty, experience and length of service, feasibility of retraining, change of rate or MOS, and profiling into a suitable "one-eyed" occupation must be given paramount consideration.

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Teaching Responsibility of Military Physicians

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IN JUNE 1957, in an article entitled "Who, Me Teach?"[1] Major General Silas B. Hays, surgeon general of the United States Army, discussed the responsibility of all physicians to contribute to the teaching program in Army hospitals. This important concept must continue to be stressed.

It seems, however, that a more vigorous approach to the problem of providing adequate teachers for the over-all training effort is needed. "Teaching must be a continual process of education for the teacher and it can be carried out satisfactorily only when he constantly tries to enlarge his knowledge and test his ideas by an experimental method . . . ."[2] This process must be a subtle one by which the student learns from the teacher and teaches while he learns, until almost imperceptibly the student becomes the teacher and helps to foster another generation of teachers. Davidson[3] has suggested that teaching must become recognized as a first-class academic pursuit for a full-time physician, and the intellectual process of integrating data of varied validity and source into a comprehensive whole should be the duty and scholarly pleasure of the physician as a full-time teacher.

As previously stressed, a successful program for medical education depends on a proper balance of sound clinical practice, continued basic and clinical research, and perpetuation of an academic atmosphere that will provide a continuous line of capable teachers.[4] Army medicine has succeeded admirably in fulfilling the first two requirements. Army medical care since World War II has been excellent, largely because of the availability of well-qualified professional and auxiliary personnel together with a progressively improving physical plant. Research activities under Army auspices have made many significant contributions to the total fund of medical knowledge, particularly in

From Walter Reed Army Institute of Research, Washington, D.C.

the fields of infectious disease, preventive medicine, therapy of burns, renal disease, and traumatic injuries. The Walter Reed Army Institute of Research occupies a prominent position in these research activities. Recently, a separate Research and Development Command was established that will increase the value of the Army's research contribution.

More attention should be focused on encouraging and training individuals who are capable of perpetuating our formal teaching programs. This is not to imply that those currently responsible for such programs are not equal to the task. On the contrary, the caliber of our service-trained physicians is proof of the ability of these teachers. Plans should be made, however, to provide for the long-range continuation of this concept. All institutions concerned with medical education should provide an atmosphere in which potential teachers are encouraged and developed. Sir William Osler [5] stated that the selection of teachers is the function of highest importance in the regents of a university and that the very best men available should receive appointments. In the Army a similar atmosphere must prevail.

Although the ability to teach seems to be innate with some, most develop this ability through a continuous process of exposure to the challenge of teaching and to contact with those in whom the art is already highly developed. Increasing responsibility along such lines can best be developed by long-term career planning. One method used by the Army is the course in military medicine and allied sciences, which is designed to bring students into contact with outstanding medical educators, civilian and military, throughout this country. The 10-month course exposes students to problems currently being investigated in medical centers, and the small size of the class promotes a direct exchange of ideas and philosophy. Emphasis is placed on concepts, and on application of statistical control and analysis to medicine, and during the course experimental design is carried out in a directed research project. This presents a unique opportunity for the potential teacher to learn technics and details of medical education and also prepares him to handle successfully problems related to medical research, an important aspect of the teacher's function.

Three factors must be present for the development of a successful teacher: a desire to teach, the ability to teach, and the opportunity to teach. Although it is widely believed that most physicians are eager to teach, contact with many physicians both in and out of military service leads me to believe that only a small proportion of physicians are sincerely and intently interested in following an

academically oriented career. The few who have such an interest should be actively sought out and given an opportunity to develop along these lines. Those who seek the opportunity to teach because it represents a "soft" assignment or for other ulterior reasons can be discovered and discouraged without difficulty. What a pleasure and privilege it is to make rounds with someone who enthusiastically challenges his students, taxes their intellect and ability to the utmost, stimulates their desire for further knowledge, and continuously devises new means of kindling the inner fire that provides the energy for learning! His opposite is already too well known in academic circles.

Unfortunately, all who desire to teach are not capable of doing so. Early recognition of the potential teacher is often possible. This may occur during the internship and become more obvious with increasing responsibilities in the years of residency training. Appropriate records of such apparent ability or potential should be made and considered in terms of future assignments and career planning.

The opportunity to teach can be provided by any assignment, but particularly in formal teaching installations. In addition to effective chiefs of services, there is an increasing requirement for capable persons at all levels of teaching responsibility. This is comparable to the instructor-through-professor structure in civilian institutions. By establishing this structure an uninterrupted line of teaching heritage will be provided. Nor is it necessary that such concepts be confined to or implemented only in our larger institutions. The expansion of internship, pre-specialty, and specialty training to new installations increases the need and offers greater opportunity for the training of future academic leaders. A profitable exchange of information can and should be extended to any level where professional contact exists. The individual who is a devoted teacher can stimulate interest and provide an academic atmosphere in outpatient clinics and dispensaries, as well as in more sophisticated areas.

Any attempt to implement such a program, stressing an academic concept, must be considered from the over-all standpoint of the Army Medical Service's basic mission. The importance of field medicine should be stressed to all physicians and more contact with problems of basic military medicine should be provided for all career officers. Although this article is primarily a discussion of education from the clinical standpoint, it should be emphasized that because of the Army's basic mission additional military education and training are necessary for all Army physicians. This training, commensurate with military responsibility, is provided. We should not, however, press the concept to a point where military physicians become overwhelmed with administrative and command burdens and lose touch with clinical

medicine, nor should the physician be expected to function primarily as a staff officer.[6] A satisfactory balance of responsibility can be established. The question of whether or not military physicians should be required to provide dependent medical care is at present a rhetorical one. The fact is that they are responsible for such care, and that it seems vital to the morale and economic stability of service families.

In the over-all view, where concepts of medical problems in atomic defense, care of mass casualties, provision of immediate medical care to troops in the field, and the many other responsibilities of the Army Medical Service must be considered, the problem of establishing an academic atmosphere in military medicine and developing military physicians who, at least in time of peace, are concerned with such a project would not appear to be an important one. It is, however, a fundamental facet in our general medical structure. For although in terms of size it is like one gene to the whole cell structure, it is nonetheless vital. It is a biologic axiom that faulty genetic material leads to faulty reproduction of the organism.

SUMMARY

The demand for excellence in medical practice requires a well-rounded program of clinical activity, research, and teaching. A suggestion is made for continued emphasis in developing teachers if our current standards are to be maintained and if military medicine is to keep abreast of its civilian counterpart. To develop well-rounded military physicians a carefully integrated program of clinical and military educational experience must be presented.

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Character Disorders, Disciplinary Offenders, and the MMPI

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RESOLVING to diminish the number of chronic disciplinary offenders in the Army, recent psychiatric policy has sought to develop technics to identify such offenders as early as possible in their careers and to eliminate them administratively from the service. A successful program of this kind would result in substantial savings in both effort and money. Programs organized at local posts seek to identify such chronic offenders by routinely screening (according to technics decided upon at the local level) court-martialed personnel or personnel who have been disciplined a number of times under the provisions of Article 15 of the Uniform Code of Military Justice. The assumption is made that many of these soldiers suffer from similar character weaknesses as those individuals who, by weight of repeated offenses and proved unsusceptibility to rehabilitation, are referred by their unit commanders for administrative separation as being unsuitable for service. It is reasoned that early detection, before such individuals have had an opportunity to expose their character defects flagrantly and destructively, would save the government considerable expense. Early detection would also remove these individuals from a noxious situation and provide them with a less crippling separation. The assumption that these minor offenses may give indication of more severe future behavior is basic to this program, but apparently has not been formally studied. Therefore, as an initial step in the organization of the pre-stockade screening program at this Mental Hygiene Consultation Service, a study to investigate this issue empirically was made.

PROCEDURE

The Minnesota Multiphasic Personality Inventory (MMPI), an instrument of demonstrated worth in a variety of selection problems,[1]

From U.S. Army Hospital, Fort Campbell, Ky.

was used. MMPI records of 25 men referred by their units for administrative separation from the service (hereafter referred to as the separation group) under the provisions of Army Regulation 635–208 concerning personnel separation for unfitness; 30 men referred by their units for evaluation following court-martial procedures, but whose sentence did not involve a term in the stockade (hereafter referred to as the C–M group); and 35 men referred by their units for evaluation following the acquisition of a second Article 15 (hereafter referred to as Art–15 group), were collected from the files. All these men had been tested at the clinic as members of a group within the past 3 months. The C–M and Art–15 groups included all the MMPIs available in those categories at the time of the data analysis. The separation group test records were collected within approximately the same period of time. Subjects in these groups did not differ significantly in age or education and were considered to represent their groups without bias.

Two predictions were made: (1) The test profiles for all 3 groups would take the shape associated with character disorder, that is, with a peak in the validity scales on F relative to L and K, and with peaks in the clinical scales on Pd and Ma, in that order. (2) The means for the 3 groups on each of the clinical scales would fall in rank order, with the separation group highest, C–M group next, and Art–15 group lowest. Thus, it was predicted that regardless of severity of offense, character weakness would be revealed, and that these offenses would be found to represent a continuum wherein behavioral difficulty could be meaningfully related to character pathology as described by the MMPI.

RESULTS

Prediction 1 can best be evaluated by graphically depicting the curves describing the mean of each scale for the 3 experimental groups. Figure 1 shows these curves.

By visual inspection, all 3 gradients assume a very similar shape. The pattern is easily recognized as that typically associated with a diagnosis within the realm of character disorder. In line with prediction, the validity scales show a peak on the F scale which falls off to relatively lower L and K scores. Also, in agreement with expectancy, all 3 curves show the highest elevation on the Pd clinical scale. The prediction of a secondary elevation on the Ma scale is not as well verified. In the Art–15 group the prediction was borne out, but the C–M group shows Sc to be higher than Ma and the separation group depicts D, Pt, and Sc more highly elevated than Ma.

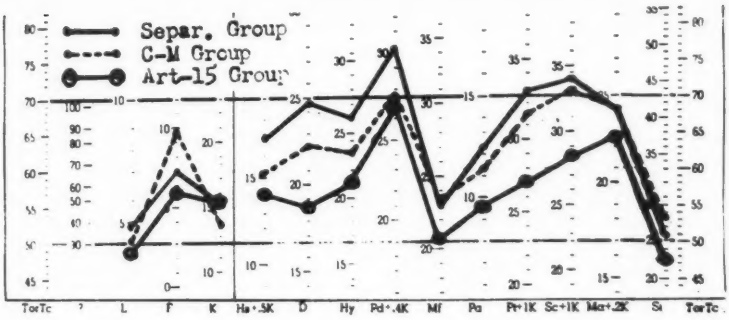

Figure 1. Mean MMPI profiles for the 3 experimental groups.

Table 1. ***MMPI means and standard deviations for the 3 experimental groups***

MMPI scales	*Separation group*		*Court-martial group*		*Article-15 group*	
	M	*SD*	*M*	*SD*	*M*	*SD*
L	52.0	8.4	50.1	8.0	48.6	7.1
F	60.2	12.4	65.3	14.4	56.9	9.7
K	55.5	9.3	52.3	11.0	55.8	7.2
Hs	64.4	14.0	59.3	14.5	56.4	9.0
D	69.4	14.6	63.3	15.1	55.0	10.0
Hy	67.0	9.8	62.2	9.8	58.0	6.7
Pd	76.7	11.0	70.2	13.7	68.1	13.1
Mf	54.8	8.7	55.6	8.7	50.2	6.5
Pa	63.0	14.6	59.9	16.0	54.7	8.5
Pt	70.6	19.2	67.4	15.1	57.9	10.4
Sc	72.2	21.0	70.6	19.7	61.5	11.8
Ma	68.0	12.5	68.2	12.2	64.1	13.9
Si	50.8	10.2	53.2	12.0	47.6	9.2

To assess the outcome relative to the second prediction, the means and standard deviations for the 3 groups can be examined in table 1 in scaled-score units.

On 7 out of 10 scales, the rank order is as expected. One reversal from the postulated arrangement takes place on the Mf, Ma, and Si scales. In complete agreement with prediction, however, the Art–15 group is found to rank lowest on all 10 scales.

DISCUSSION

Both predictions appear to have been met in the results. As predicted, Pd was the highest scale for all 3 groups. Although the secondary

elevation of the Ma scale was not substantiated, the essential element of this prediction, that all 3 curves would assume the form associated with psychopathic personality, was well verified. Coding [1] of the curves according to the highest 3 scales of each and comparing these with the representative cases listed in the MMPI *Atlas* [2] showed that in that publication 19 of the 27 adult cases carrying such profiles were diagnosed in the character-disorder category.

The second prediction was also well supported. Correct ranking on 7 of 10 scales is especially striking since 2 of the "misses" (Mf and Si) are generally regarded as the weakest scales on the test.

These positive results, of course, in no way imply that we are viewing a developmental cross section in these graphs. Not all subjects in the C–M and Art–15 groups will be considered at some future date for administrative release. The problem confronting the pre-stockade screening program is that of determining which indices of this character weakness, if any, are predictive of continued misbehavior.

The unexpected elevation of the Sc scale in all three groups warrants further study as well. It has been conjectured that a substantial number of those administratively separated with character weaknesses are emotionally disturbed people who, at some time in the future, would more overtly display personality disorganization rather than passive-aggressive or frankly antisocial behavior. The elevation of Sc may represent mainly that portion of the variance contributed by such personnel. We are at present employing psychologic data as well as various social history ratings in a follow-up study to explore this area further.

Two other considerations appear pertinent. First of all, the subjects comprising this study were, for the most part, airborne personnel. As volunteers for somewhat hazardous duty who are constantly engaged in rigorous training, they may differ in some significant fashion from the typical soldier. Second, examination of the standard deviations discloses that there is considerable overlap among these groups, reinforcing the viewpoint that the figures represent central tendencies of rather heterogeneous variance.

SUMMARY

The assumption that disciplinary offenders who cannot be rehabilitated can be identified earlier in their service experience on the basis of lesser offenses is discussed in terms of its general implications concerning character weakness in such personnel. Three groups of sub-

jects were examined in this study: 25 who had been referred for administrative separation from the service, 30 who had received a court-martial, and 35 who had received two or more Article 15s. The MMPI was utilized to test 2 specific predictions: (1) All 3 groups would display profiles descriptive of character disorder, and (2) the means for these 3 groups on each of the clinical scales would fall in rank order, with the separation group highest, the court-martialed group next, and the Article 15 group lowest. Both predictions were verified. The implications of the findings are discussed.

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INSTITUTIONS FOR PSYCHOPATHS?

It is my belief that when society has had enough of dilly-dallying with the youthful criminal and sex offender, it will demand that a special institution be created in which to house and care for him. There, he will associate only with his kind. There, individual attention can be given to his specific problem. The staff will consist of medical men who have been trained in the management of mental disorders and who will look upon the prisoner not as a criminal but as a mentally sick individual. . . . I see no reason why it is illogical to add to our state institutions another one where these psychopathic delinquents, criminals or sex offenders can be isolated from the world, and by means of which society can be spared the heartaches and tragedies that so often result from our permitting such folks to roam at will. I probably shall not live to see that day, but I predict its coming.—TOM BENTLEY THROCKMORTON: The Psychopathic Personality. *Journal of the Iowa State Medical Society*, June 1959.

Venereal Diseases in the Far East

Evaluation of Therapy

LIEUTENANT HAROLD L. BIRENBOIM, MC, USNR
HOSPITAL CORPSMAN, FIRST CLASS, MELVIN L. GOBLE, USN

THIS IS AN EVALUATION of initial therapy in 65 cases of gonorrheal urethritis, 40 cases of nongonococcic urethritis, and 24 cases of chancroid, encountered from 6 December 1958 to 29 April 1959, aboard a military transport en route from Japan and Korea to Seattle, Washington. Being at sea, we were in the unique position of having almost perfect control of patients reporting to sick bay with a venereal disease: Opportunity for re-exposure or alcoholic ingestion was virtually nonexistent, and patients were always available for re-examination and subsequent changes in therapeutic management. All patients were lost to follow-up study upon debarkation.

Since use of the broad-spectrum antibiotics or penicillin may mask a syphilitic infection, these drugs should not be used in the treatment of venereal diseases until primary syphilis has been ruled out by dark field examination, serologic tests, or a *Treponema pallidum* immobilization test. Serologic follow-up for the next few months after drug therapy has ceased is also advisable.

GONORRHEAL URETHRITIS

Patients with laboratory confirmation of gonorrhea and with no history of penicillin sensitivity received 600,000 units of procaine penicillin G daily for 3 days. If gonorrhea persisted, 600,000 units of procaine penicillin G was then administered twice daily for 3 days. If gonorrhea still persisted, 1,200,000 units of procaine penicillin G was administered twice daily for 3 days.

From the U.S.S. *General William Mitchell*, FPO, San Francisco, Calif. Lt. Birenboim is now assigned to U.S. Navy Recruiting Station, 2420 Broadway, Kansas City, Mo.

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Of 54 patients treated with 600,000 units of procaine penicillin G daily for 3 days, 47 required no further therapy. Nongonococcic urethritis developed in 2 patients, who were subsequently treated with Aureomycin. In 5 patients, urethral discharge containing intracellular and extracellular gram-negative diplococci persisted, and the dosage of penicillin was increased to 600,000 units twice daily for 3 days. Of these, 2 continued to have positive smears and the dosage was again doubled to 1,200,000 units twice daily for 3 days. There were no treatment failures, provided the dosage of penicillin was sufficiently high (table 1).

Table 1. ***Results of therapy in 65 patients with gonorrheal urethritis***

Drug	*Dosage*	*Number of patients*	*Failures*	
			Gram-negative diploccoci	*Nongonococcic discharge*
INITIAL TREATMENT				
Aureomycin	500 mg stat. and 250 mg q. 6 h. for 5 days	10	0	0
Terramycin	500 mg stat. and 250 mg q. 6 h. for 5 days	1	0	0
Procaine penicillin G	600,000 units daily for 3 days	54	5	2*
SECONDARY TREATMENT				
Procaine penicillin G	600,000 units b.i.d. for 3 days	5	2	0
TERTIARY TREATMENT				
Procaine penicillin G	1,200,000 units b.i.d. for 3 days	2	0	0

*Subsequently treated with Aureomycin

Of 11 patients with a history of penicillin sensitivity, 10 received Aureomycin (chlortetracycline) hydrochloride capsules, 500 mg immediately and 250 mg every 6 hours for 5 days, and 1 patient received Terramycin (oxytetracycline) hydrochloride by a similar schedule. None of the 10 penicillin-sensitive patients treated with Aureomycin required more than the initial course of therapy. This was also true of the 1 Terramycin-treated patient (table 1).

NONGONOCOCCIC URETHRITIS

All patients whose urethral smears failed to demonstrate gram-negative diplococci reported to the laboratory the following morning. Prior to urination, the urethral discharge was cultured and sensitivity tests were run for penicillin, streptomycin, erythromycin, Aureomycin, Terramycin, and Chloromycetin (chloramphenicol). Gantrisin (sulfisoxazole), 3 grams initially, followed by 1 gram 4 times a day for 5 days, was administered to all patients with no history of sensitivity to the drug. It was the intention to use other drugs with the sensitivity tests as a guide if Gantrisin was ineffective.

Table 2. ***Results of therapy in 40 patients with nongonococcic urethritis***

Drug	*Dosage*	*Number of patients*	*Failures*
INITIAL TREATMENT:			
Erythromycin	500 mg stat. and 250 mg q.i.d. for 5 days	3	0
Gantrisin	3 gm stat. and 1 gm q.i.d. for 5 days	37	11
SECONDARY TREATMENT:			
Aureomycin	500 mg stat. and 250 mg q.i.d. for 5 days	6	0
Erythromycin	500 mg stat. and 250 mg q.i.d. for 5 days	5	0

Of 40 patients (26 white and 14 Negro), ranging in age from 18 to 38 years, with nongonococcic urethritis, 20 had past histories of gonorrhea, 7 had past histories of nongonococcic urethritis, and 13 had no history of previous infection. Of 38 cultures, 37 grew staphylococcus and 1 a gram-negative bacillus. On sensitivity testing, Aureomycin and erythromycin were the 2 drugs of choice. In only a few cases was there slight sensitivity to other antibiotics. Three patients were not sensitive to any of the antibiotics tested but responded to Gantrisin therapy. Of the 40 patients, 1 with a history of sulfonamide sensitivity was treated with erythromycin, and 2 others were placed on erythromycin because of time limitations. Of 37 patients receiving Gantrisin, 3 grams initially and 1 gram 4 times a day for 5 days, 26 were asymptomatic at completion of therapy (table 2). The remain-

ing patients continued to have a discharge and were placed on the drug indicated by the sensitivity tests, 6 on Aureomycin, 500 mg initially, followed by 250 mg 4 times a day for 5 days, and the remaining 5 on erythromycin, 500 mg initially, followed by 250 mg 4 times a day for 5 days. All patients were asymptomatic at debarkation in the United States.

CHANCROID

Gram-stained smears and dark field examinations were made on all lesions of the genital area. In 24 cases *Hemophilus ducreyi* was found. These patients received Gantrisin, 3 grams initially, followed by 1 gram 4 times a day for 5 days, following which all lesions cleared.

DISCUSSION

Gonorrheal Urethritis

At the time penicillin was introduced as a therapeutic agent in gonorrhea, the sulfonamides were already proving ineffective, because of the natural or acquired resistance of the causative organism to the drug. Such resistance was not observed with penicillin; a single intramuscular injection of 300,000 units of penicillin in oil and beeswax, and later of procaine penicillin G, was effective.[1] However, the resultant decline of gonorrheal urethritis in the immediate postwar years soon slackened, and by 1955 the incidence of gonorrhea in both sexes began to increase.[2]

As a result, an investigation of *in vitro* sensitivity of gonococci to penicillin was undertaken by Curtis and Wilkinson,[3] who concluded that an intramuscular injection of 600,000 to 1,200,000 units of aqueous procaine penicillin G with or without a "booster" dose of crystalline penicillin G was likely to give the best results. However, because 20 percent of strains of gonococci are sensitive to concentrations of penicillin greater than 0.06 units per ml, these authors believed that the ideal preparation of penicillin should reach a blood level in the tissues of 1 unit per ml, maintain this level for 18 to 24 hours, and then rapidly fall to zero.

At the present time, approximately 1,000,000 reported cases of gonorrhea occur annually in the United States, making this disease second only to measles in the list of reportable communicable diseases.[4] As yet, no strains highly resistant to penicillin have been isolated from patients, and strains requiring blood levels of more than 0.05 micro-

grams per ml for complete inhibition are referred to as having "decreased sensitivity." [5]

It is believed by the authors that 1,200,000 units of procaine penicillin G with an initial booster of 600,000 units of crystalline penicillin G injected intramuscularly for 3 consecutive days is the treatment of choice in acute gonorrheal urethritis in the male.

Nongonococcic Urethritis

Nongonococcic urethritis is a disease of unknown etiology and is still a diagnosis of exclusion. Organisms found in gram-stained smears and cultures are now generally accepted as contaminants.[6] In a series of 428 patients with nongonococcic urethritis observed up to 3 months after previous treatment, Morton and Read [6] found that the over-all recurrence rate was 11.6 percent, the incidence being higher in younger single men. Neither age, occupation, past history, clinical symptoms, race, duration of urethral discharge, duration of incubation period, nor examination of smears offered a clue to the best form of therapy. These authors also found a definite tendency for recurrences to increase in number with the use of wide-spectrum antibiotics and postulated that these drugs might interfere with immune responses. Gartman and Leibovitz [7] found that 62 of 106 (58 percent) untreated controls were asymptomatic after 8 weeks. For this reason, therapy with a relatively innocuous and inexpensive drug such as Gantrisin is recommended by the authors.

Chancroid

Although streptomycin administered intramuscularly, 1 gram twice daily for 5 to 7 days, and the broad-spectrum antibiotics administered orally, 500 mg 4 times daily for 5 to 8 days, are effective in the treatment of chancroid,[8] sulfadiazine, 2 to 4 grams daily in divided dosages for 5 to 7 days, is also effective.[8] We have found the administration of sulfonamide in the form of Gantrisin to be the treatment of choice.

SUMMARY

During the period 6 December 1958 to 29 April 1959, 65 cases of gonorrheal urethritis, 40 cases of nongonococcic urethritis, and 24 cases of chancroid were encountered aboard a military transport en route from Japan and Korea to Seattle, Washington.

Of 65 patients with gonorrheal urethritis, 54 received injections of 600,000 units of procaine penicillin G daily for 3 consecutive days, 7

required a second 3-day course of 600,000 units twice daily for 3 days, and 2 required a third 3-day course of 1,200,000 units twice daily for 3 consecutive days. There were no treatment failures. Of 11 patients with gonorrheal urethritis and history of penicillin sensitivity, 10 received Aureomycin and 1 received Terramycin, 500 mg initially, followed by 250 mg every 6 hours for 5 days. All responded to the initial course of therapy.

Forty patients had nongonococcic urethritis. Twenty-six (70 percent) of 37 treated with Gantrisin, 3 grams initially, followed by 1 gram 4 times a day for 5 days, responded to therapy—as did the 3 patients originally treated with erythromycin, 500 mg initially and 250 mg 4 times a day for 5 days. All 11 patients who continued to have a discharge after initial treatment with Gantrisin responded to a second 5-day course of therapy—6 patients receiving Aureomycin, 500 mg initially and 250 mg 4 times a day for 5 days; and 5 patients receiving erythromycin in a similar dosage schedule.

Gantrisin, 3 grams initially, followed by 1 gram 4 times a day for 5 days, was effective in 24 consecutive cases of chancroid.

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The French Army Medical Museum Val-de-Grace

COLONEL HAROLD W. GLASCOCK, JR., MC, USA

DAY TO DAY patient care and the need to keep abreast of new developments in military medical science leave little time for reflection on the history of the development of military medicine and surgery. The military surgeon today knows little about the men who contributed so much to his present-day art and science, nor stops to consider what these discoveries have meant to medicine, surgery, and public health. There are a few memorials to these outstanding men, and a few of our military hospitals bear their names. But the efforts of Walter Reed, Jonathan Letterman, Ambroise Paré, Alphonse Laveran, and Edmund Delorme are often overlooked. Studying the problems they surmounted is usually considered of little value.

Yet there is much to be gained from the study of military medical history, and lessons of the past may be useful in present and future military situations. Such study would be simplified if all military medical services maintained historical museums and libraries.

The Service de la Santé Militaire Française has a military medical museum in Paris that is a pioneer in this field. Established in 1916 during World War I for the "Archives et documents de guerre du Service de Santé," and in continuous operation since its opening, it occupies a part of the old monastery building on the grounds of the Val-de-Grace French Military Hospital. In 1919 it became an integral part of the French Army's medical school at Val-de-Grace Hospital.

The museum collection contains original documents and articles of military medical interest from the time of the Renaissance to the present day. The library section compares favorably with the National Library of Medicine in Washington, D.C., which was begun as the Library of the Surgeon General's Office, U.S. Army, in 1836, and

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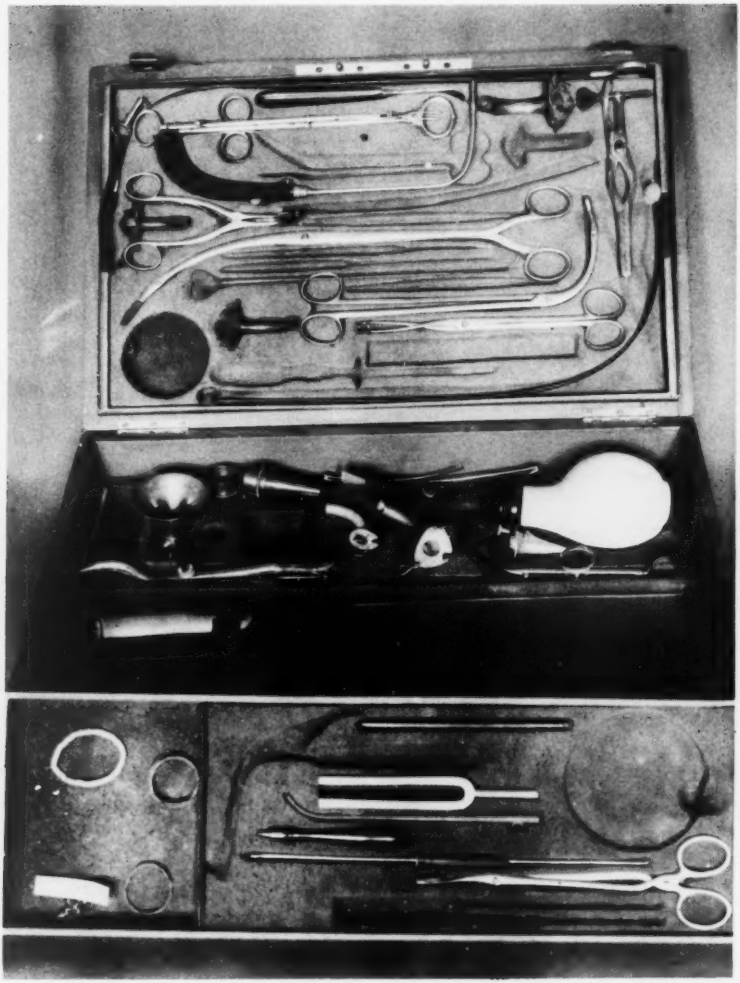

Figure 1. The instruments and case used by Baron Dominique Larrey during the Napoleonic campaigns.

developed into a great library by Dr. John Shaw Billings shortly after the Civil War. It contains more than 110,000 reprints and 60,000 volumes, including a collection of the *Journal de Médecine Militaire* dating back to 1766, historical archives of the Service de Santé from

1781 to 1914, and a special set of reports, memoirs, original works, and monographs on medical subjects by authors from both of the opposing armies during the war of 1914–18.

Figure 2. Before-and-after moulages of plastic repairs for facial wounds performed by Morestin in World War I.

The exhibits on anatomy and clinical subjects include wound moulages, photographs, instruments, projectiles, clothing, anatomic sections, and displays showing the results of plastic operations in battle zones. Moulages of the plastic surgery performed by Morestin following World War I and those on maxillofacial surgery performed by Virenceg after World War II are of interest to physicians, as are the illustrations of skull and spine fractures and the types of missiles that produced them.

The museum's section on field sanitation and equipment demonstrates by scale models the numerous ways in which satisfactory living conditions for front-line troops were provided in all parts of the world. There are also models of field hospitals, ambulances, litters, and therapeutic appliances. The hall of radiobiology, a part of this section, contains 20,000 films of war wounds from World War I.

Figure 3. Model of early medical air ambulance used in 1920–21.

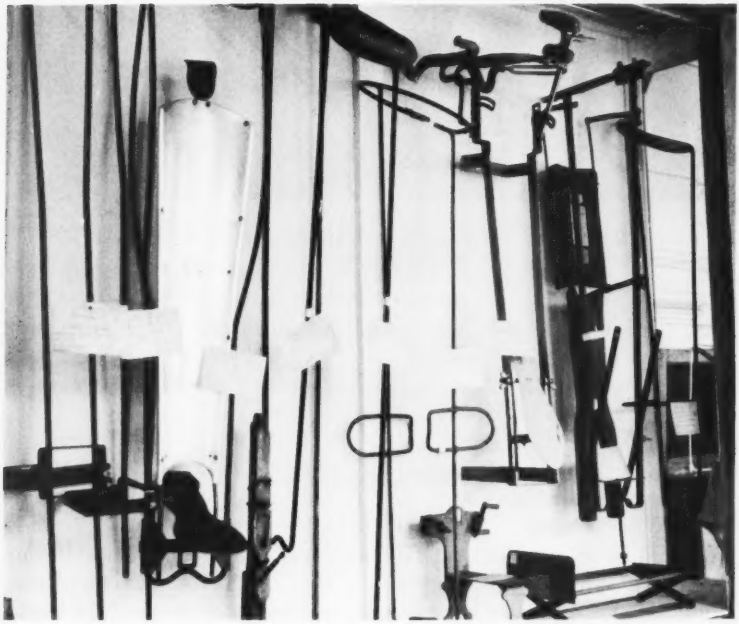

Figure 4. Leg splints of varying design used in World War I by the Service de Santé des Armées.

The historical exhibits include paintings, busts, and relics of outstanding French military surgeons, among them Dominique Larrey, Pierre Percy, H. Larrey, Desgenettes, Alphonse Laveran, Jean Villemin, and H. Vincent.

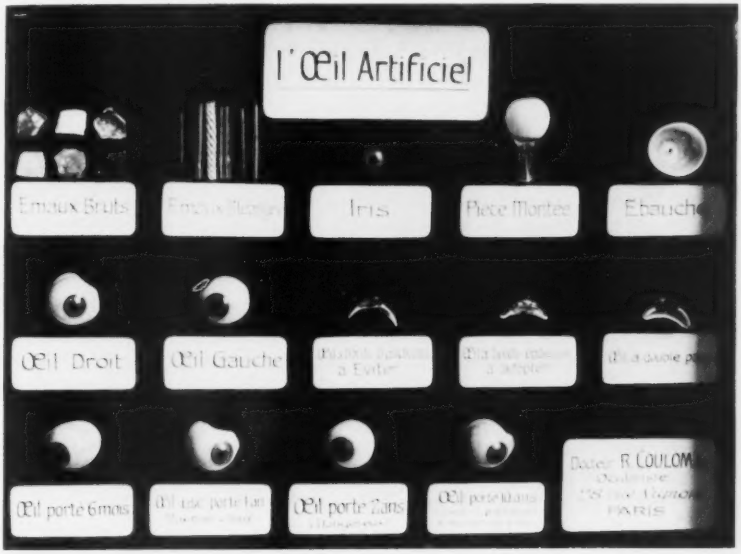

Figure 5. A display of steps in the production of artificial eyes manufactured for the French Army in World War I.

The scientific advances made by military physicians and the hard work necessary to safeguard military personnel from countless hazards to their health and welfare are clearly visible in the exhibits of this outstanding collection.

Le médecin Colonel J. Hassenforder is the present curator of the museum.

THE TRUE PHYSICIAN

No physician, in so far as he is a physician, considers his own good in what he prescribes, but the good of his patient: For the true physician is also a ruler having the human body as a subject, and is not a mere money-maker.—Plato

Plasma Electrolyte Changes During Simulated Arctic Survival Conditions

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HORACE F. DRURY, M.A.
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THE EXPERIMENTS DESCRIBED in this report were part of an extensive program to evaluate pemmican and pemmican-sugar rations under semistarvation survival conditions in the Arctic. In choosing these rations for evaluation it was assumed that, theoretically at least, the food would be carried by military fliers. Thus, space limitations within the aircraft dictated a ration of maximum caloric density.

For reasons given elsewhere,[1,2] a daily intake of 1,000 calories was considered to give optimum survival potential. That is, for a given volume of food, a man could be kept alive and relatively functional for the longest period of time if the ration were consumed at the rate of 1,000 calories per day.

During such semistarvation survival conditions, a number of physiologic and biochemical adjustments must be made, especially during the first 2 or 3 days. Some of these adjustments have been described.[1, 2] However, very little experimental work has been reported on the effects of such conditions on blood chemistry. Consequently, the following report is presented in the hope that it will give a clearer picture of the plasma electrolyte changes during semistarvation.

METHODS

Ten healthy, male Air Force personnel and 2 members of the investigating team were used in this study. They were first exposed to a

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2-day control period, during which blood samples were taken to establish control levels of electrolytes and to accustom the men to the experimental procedures. This was followed by a 5-day field exposure at an isolated field site. Ambient temperature was approximately 75° F during the control period and ranged from −10° F to −48° F during the field period. While in the field, the subjects wore standard Air Force arctic clothing in the daytime and slept in double sleeping bags in unheated, but not uncomfortable, shelters at night. Except for a 2-hour period every morning when blood samples were taken, and again in the evening when psychologic tests were made, the subjects remained in the field at all times. Although frequently they were uncomfortably chilly, they were never subjected to really severe cold stress. Their daily activity consisted of snowshoeing, skiing, chopping wood, building snow houses and improving the camp area.

In the field, the subjects were randomly distributed into 3 groups of 4 individuals each; within the groups, each subject received a daily ration containing 1,000 calories. These rations were made up to give one group an all-pemmican diet, 46 percent protein, 46 percent fat, 8 percent water and minerals; another received a diet of pemmican plus 40 grams of sucrose substituted isocalorically; and a third group received a diet of pemmican plus 80 grams of sucrose substituted isocalorically. Normal Air Force hospital food was eaten during the 2-day control period. The subjects had access to water, salt, and noncaloric condiments at all times. Chili powder was by far the preferred seasoning.

For the assay of plasma electrolytes, venous blood samples were drawn and heparinized after an all-night fast. Sodium and potassium were determined on a Perkin-Elmer flame photometer, using lithium as an internal standard. Calcium and magnesium were estimated by a slight modification of the chelate titration method of Friedman and Rubin.[3] Chloride was assayed by the method of Keys [4] and phosphate by the method of Taussky and Shorr.[5] The packed cell volume was determined in a hematocrit tube following 30 minutes' centrifugation at 2500 rpm on a swinging head, clinical centrifuge. Hemoglobin was determined by the indirect iron method of Wong.[6]

Statistical evaluation of the data was obtained by an analysis of variance.

RESULTS

It was established during the 2-day control period that levels of the various blood constituents were within the normal range expected for young men. Subsequent statistical analysis showed that the

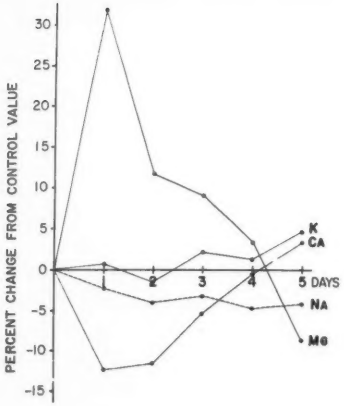

Figure 1. Changes in the plasma levels of sodium (Na), potassium (K), calcium (Ca), and magnesium (Mg) during a 5-day field exposure to simulated arctic survival.

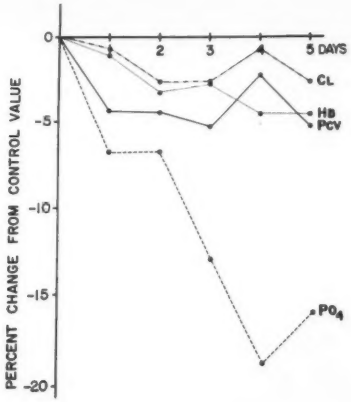

Figure 2. Changes in the levels of plasma chloride (Cl), plasma phosphate (PO_4), blood hemoglobin (Hb), and packed cell volume (Pcv) during a 5-day field exposure to simulated arctic survival.

changes observed during the field portion of the study were independent of differences in diet between the 3 groups. Therefore, to simplify the presentation of the data, all the individuals were treated statistically as 1 group. Changes in the levels of the various blood components during the field portion of the study were calculated as percent change from the control values. These data are presented in figures 1 and 2.

The semistarvation field conditions led to marked ($P<0.001$) changes in 3 of the electrolytes studied. Thus, the magnesium concentration increased sharply during the first day in the field. This was followed by a progressive fall during the next 4 days and, by the fifth day, it was below the original control level. Calcium behaved in exactly the opposite fashion: that is, it showed a sharp decrease during the first day or two in the field, followed by a progressive increase leading to slightly greater than control values on the fifth day. Phosphate decreased to what appeared to be a minimum value by the end of the fourth or fifth day.

With the exception of potassium, which remained essentially unaltered, the remaining blood constituents—sodium, chloride, hemoglobin, and packed cell volume—all underwent changes of similar magnitude and direction during the course of the field exposure. This

Table 1. ***Daily dietary and mineral intake***

Group	*Diet (gm)*		*Mineral intake (mg)*			
	Pemmican	*Sugar*	*Mg*	*Ca*	*K*	*P*
I	168	0	68	31	840	667
II	140	40	58	26	700	556
III	112	80	49	22	560	444

amounted to a progressive decline that reached values of 2 to 4 percent below the control levels by the end of the fifth day. All these changes were significant at the 0.05 level or less.

In addition to the assays of plasma levels of electrolytes, the intake of magnesium, calcium, potassium, and phosphorus was also determined by appropriate analyses of wet-ashed samples of the diet. The data are summarized in table 1. The quantity of sodium and chloride was not determined since salt was available at will throughout the study. The intake of magnesium and calcium was quite limited, whereas potassium and phosphorus were ingested in considerably larger quantities. The relationship of these intakes to the minimum daily requirements cannot be stated since such requirements have not been well established.

DISCUSSION

As mentioned earlier, reports on blood electrolytes during starvation are somewhat limited. Those that have appeared in the literature are difficult to evaluate since the data have been obtained for the most part from victims of involuntary and unplanned starvation and initial control values are unobtainable. Frequently, the subject's nutritional state is not certain, and many reports are confined to individual cases. As a result, subtle or transient changes, such as were observed in the present study, may have been overlooked. In any event, results have varied considerably, and one can find reports of electrolyte levels ranging from lower to higher than normal.[7]

Among the experiments that have been performed, those of Gamble, Ross and Tisdall,[8] who studied starvation in children, probably are most nearly comparable to the ones reported here. These investigators reported dehydration in their subjects, a sharp reduction in plasma bicarbonate that was proportional to the increase in ketone level, a slight decrease in sodium, potassium, magnesium, and chloride, and no change in calcium at the end of 4 days' fasting. All these

findings—except the bicarbonate level, which we did not measure—agree substantially with ours at the same stage in starvation. However, since the most significant changes in calcium and magnesium were observed in our subjects early in the study and had virtually disappeared by the end of the fourth day, they may have been overlooked by these investigators.

We were especially interested in possible correlations between electrolyte changes and changes in blood and urinary metabolites. The deviation from the control values of plasma calcium and magnesium corresponds, timewise, to the sharp fall in blood sugar and the rise in urinary ketone bodies reported previously.[1, 2] The subsequent return toward normal concentrations of these ions also corresponds to a slight recovery of blood sugar levels and a fall in excretion of ketone bodies. In addition, the progressive fall in plasma phosphate corresponds to a loss of body weight and total urinary nitrogen excretion.

The present data also indicate that semistarvation leads to hemodilution. This is evident from the slight, but parallel, lowering of blood hemoglobin, packed cell volume, and plasma sodium and chloride. The cause of this hemodilution is not apparent, but it may be related in some manner to tissue breakdown or an increased fat and protein catabolism. It is interesting to note that during the course of this study subjects also exhibited a weight loss, 5 or 6 pounds greater than could be explained on the basis of the caloric deficit, that could only be due to loss of body water.[1]

SUMMARY

The concentrations of plasma sodium, potassium, calcium, magnesium, chloride, and phosphate, as well as blood hemoglobin and packed cell volume, were determined before and during simulated arctic winter survival.

During the 5-day semistarvation (1,000 calories per day) survival situation, the following blood changes were noted: (a) an increase in magnesium and a decrease in calcium after the first day, with subsequent return toward normal levels over the next 3 or 4 days; (b) a progressive decline in plasma phosphate during the first 4 days; (c) slight decreases in sodium, chloride, hemoglobin, and packed cell volume; (d) no significant change in plasma potassium.

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THAT CUP OF HOT TEA

Among ill-chosen words, the dietary unit, the Calorie, is remarkable. Although one thousand times larger than the physicists' calorie (which raises 1 ml of water 1°C), its name is exactly the same except that it is spelt with a capital C. I know well that at least half of you had no idea this was so because my questionnaire showed 25 out of 48 fellows of the R.C.P. thought that food and physics calories were identical. It is not your fault—it is the fault of the word. Until a few years ago I, too, thought they were the same. Then in a thoughtful moment, drinking a large hot cup of tea, I worked out that it was about 10°C hotter than I was and so if my cup held 100 ml I was getting 1,000 calories per cup. In a flash I saw the reason why fat patients never lost weight on my diets and I planned the cold-food cure for corpulence. To find the answer on page 1 of a schoolboys' elementary physics book was humiliating.—RICHARD ASHER: Making Sense. *The Lancet*, September 19, 1959.

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Ineffectiveness of Suction in Removing Snake Venom From Open Wounds

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THE PRESENT EXPERIMENTS were prompted by Purananda's statement [1] that incision in an envenomated muscle would provide a new surface for rapid venom absorption. The question arose whether or not suction can remove significant quantities (i.e., 40 mg) of snake venom from an open intramuscular wound.

Since 1928, when Jackson and Harrison [2] published their experimental findings in dogs, tourniquet, incision, and suction have become the accepted and recommended first-aid treatment for snakebite in this country. In other countries this method has not met with such acceptance.[1,3-5] In 2 series of patients treated alike, except that incision and suction were used in 1 series only, no clinically discernible difference in results was noted.[3]

Previous reports from this laboratory [6,7] describe the inefficacy of tourniquet and of incision and suction following injection of dogs and rabbits with lethal doses of snake venom. In fact, it became apparent that immobilization, incision, and suction led to earlier death than simple immobilization for a like period of time. It was also observed that a tourniquet was no more effective in stopping lymph flow and venous return than immobilization alone.

MATERIAL AND METHOD

An attempt was made to determine whether fairly large amounts of venom (40 mg) could be extracted from a fresh-cut muscle surface. Rabbits (average weight 2.14 kg, range 1.3 to 3.6 kg) were spread-

From Naval Medical Field Research Laboratory, Camp Lejeune, N.C. Research Project NM 51 03 09.1.2.

eagled, back down, in a frame.[6] An area, 1 inch by 1 inch, was shaved on the left rear leg and a cruciate incision, 1 cm by 1 cm, was made into the adductor magnus muscle with a ¼-inch stylet from a commercial snakebite kit. Dried *Crotalus adamanteus* (eastern diamondback rattlesnake) venom was placed in solution (200 mg/ml) and introduced into this wound in the following manner: with a tuberculin syringe, 0.1 ml of the solution was laid as evenly as possible in the bottom of each limb of the incision. In this way, 40 mg of the venom (between 6 and 8 lethal doses) was placed in the base of the intramuscular wound in each rabbit. After 3 minutes, a suction pump from a commercial snakebite kit was used to apply vigorous suction to the wound for a period of 30 minutes. At the end of the 30-minute period the rabbits were taken from the frames and placed in cages. Half-hourly observations were made to determine the approximate time of death. Controls (average weight 2.04 kg, range 1.3 to 2.9 kg) were treated in the same manner, except that no suction was used.

The rabbit served as an indicator of removal of venom. The dose of 40 mg was arbitrarily considered to be the minimum that must be removed from a wound in a human. The strength of venom solution selected (20 percent) is roughly the strength of natural venom (approximately 22 percent). The venom was allowed to stand in the wound 3 minutes, the time arbitrarily considered necessary for incision and suction to be initiated when treatment is in the hands of an inexperienced person.

RESULTS

The effect of suction upon survival time is shown in table 1. It will be noted that death occurred earlier in 15 of the 20 suction-treated animals than in the 10 controls, and that 6 control animals survived all but 1 treated animal. The average length of survival for the treated animals was 157.5 minutes, as compared with 246 minutes for the controls. The difference in survival time between the 2 series was so significant by the t test that it was considered unnecessary to expand the experiment employing additional time and animals.

DISCUSSION

The only variable in experimental conditions between these 2 series of animals was the use of 30 minutes of suction. Immobilization appears to be significantly better than suction for the 30-minute period following the deposit of venom in a muscle. This is the period

Table 1. ***Effect of suction upon survival time of immobilized rabbits receiving snake venom in open wound***

Survival time (minutes)	*Number of deaths*	
	Suction-treated animals	*Controls*
60–89	1	0
90–119	4	0
120–149	6	0
150–179	4	0
180–209	1	2
210–239	3	2
240–269	0	3
270–299	0	3
300–329	1	0
N	20	10
M	157. 5 min.	246. 0 min.
σ	±56. 7 min.	±34. 8 min.
	55. 2 min. uncorrected	33. 0 min. uncorrected
	$t=4.5$ significant beyond 0.001*	

*Since observations were made of the period within which death occurred rather than of the actual moment of death, the calculations are those used for events falling in intervals.[5, 9]

in which first aid is rendered, prior to specific treatment. It is believed that any first-aid measure which favors the spread of venom will certainly jeopardize the eventual outcome of specific or symptomatic treatment. According to the results of this experiment, the value of incision and suction is dubious.

SUMMARY AND CONCLUSIONS

Venom (40 mg) of the eastern diamond-back rattlesnake, *Crotalus adamanteus*, was placed in intramuscular wounds in rabbits. The test animals were immobilized and suction was applied for 30 minutes; the control animals were immobilized without suction. All the animals died, suggesting that suction is not an effective method of removing venom from an open wound. The application of suction for 30 minutes

combined with immobilization was followed by significantly earlier death than immobilization alone, suggesting that suction may be conducive to a more rapid invasion of venom.

ACKNOWLEDGMENT: The authors wish to acknowledge the technical assistance of Hospital Corpsmen, first class, G. W. Small and H. N. Edwards, USN, and Private, first class, K. L. Clark, USMC. The *Crotalus adamanteus* venom was obtained from Ross Allen, Silver Springs Fla.

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UNEMPLOYED VIRUSES

Most of the newer viruses are still unfamiliar to the nonspecialist; indeed their discovery has occurred so rapidly as to leave the medical world somewhat confused by their multiplicity. Progress has frequently been so rapid that the number of agents known and characterized has outstripped the number of clinical diseases which could be correlated with them.—John E. Hotchin: Virology Advances. *Health News*, February 1960.

Medical Impairments and Military Effectiveness I

Criteria of Adequate Performance: Baseline Sample

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CAPTAIN NORMAN A. HILMAR, MSC, USA
COLONEL CLARK B. MEADOR, MC, USA

A DEFINITE NEED EXISTS to provide a clear-cut answer to the question, "What is the minimum medical standard that will enable a person to perform satisfactorily and effectively some job in the military service?" The investigation to be described will present one approach to the solution of this problem.

Up to the present time, minimal physical standards deemed to be consistent with the physical requirements of a military occupational specialty (MOS) have been established on the basis of judgment. Although such decisions are made by people with substantial military, medical, and personnel experience, these standards are still subjective and require empiric evaluation to assess their validity or need for modification.

In approaching this validation, it is apparent that there are essentially 2 well delineated but dissimilar elements to be related: (1) the soldier's medical status as determined by recognized medical procedures and (2) the specific nature of the duties to be performed as determined by job analysis within the military. The link or common element in establishing a relationship between these 2 dissimilar elements is the quality of the soldier's military performance in his assigned job, for his performance level is determined, among other things, both by his physical condition and by the requirements of his military job.

The relationship between military effectiveness and medical impairment has been recognized. In 1951, Egan and his colleagues [1]

From Walter Reed Army Institute of Research, Washington, D.C.

reported on a study of neuropsychiatric rejectees. Also in the area of neuropsychiatry are the 3 studies reported by Glass and his associates [2-4] which considered other aspects of this problem. Duodenal ulcer as a specific clinical entity and its relationship to military effectiveness has been reported in several studies by Palmer, Sullivan and Hamilton.[5-8]

At this point it should be made clear that, for the purpose of this investigation, a soldier's performance in a military job (MOS) is not considered a measure of skill level in performing the specific duties of the MOS. Performance in a military job is measured in terms of the man's ability to provide adequate and satisfactory military service while attaining at least minimal skill requirements of the MOS.

Ability to complete the prescribed tour of military service is far more important from the point of view of over-all manpower resources than the degree of skill exhibited in an assigned MOS, provided, of course, that the man can function in his MOS at all. Even this proviso, however, must be accorded second place in considering the problem. If the soldier does not possess the ability to function adequately at the lowest skill level required for his MOS, the possibility always exists that reassignment to a different MOS or retraining in his old MOS might permit him to function satisfactorily at the lowest skill level of the MOS. On the other hand, if he does not possess the capacity to complete a required tour of military service at the lowest skill level of any MOS, regardless of the reason, the only alternative is release from the military service with consequent loss of military manpower.

Thus, in the final analysis, the establishment of minimal medical standards for MOS's depends on the answer to the question, "What is the minimum physical and mental status that will permit 'adequate performance' in a given MOS?" Adequate performance, then, must be considered in terms of medical condition as measured by ability to serve satisfactorily in the military, and not in terms of degrees of skill in carrying out the duties of a specific MOS. Because the physical demands made by an MOS in terms of duties to be performed are constant, and because a person's medical status at any point in time is fairly constant, this performance in a given MOS can be used as an empiric index for establishing minimum physical requirements in an MOS.

It is recognized that there are a host of factors such as motivation or morale which must also enter into a determination of adequacy of military performance. In view of the intangible nature of these factors and, since they are beyond the scope of this study, they have been eliminated from consideration.

Two possible measures of adequacy of military performance found in the soldier's personnel records are the ratings made by the company or battery commander for efficiency and conduct. However, such ratings are extremely general and are not necessarily representative of the over-all adequacy of the soldier's performance. Additionally, such ratings are based on the company commander's judgment and for this reason leave much to be desired as objective measures of adequacy of military performance. It is necessary, then, that a simple measure be developed for this purpose to permit investigation of both the medical status of the soldier and the requirements of the job within a common frame of reference. Before such investigations can be made, however, and before minimum physical standards representing varying degrees of specific medical disabilities can be established as consistent with job requirements, some valid and reliable measure of "adequate" performance of duty must be determined for subjects who did not receive a medical discharge before completing their obligated period of military service, in order that any marked deviations from this "adequate" performance may be identified.

For the purpose of this investigation "adequate performance" is defined as completion of a tour of military service (2 years under Selective Service Law, P.L. 759, 80th Congress, 1948) and receipt of an honorable discharge upon completion of this period of service. Implicit in this definition is the assumption that, during the 24-month period of military service, the behavior and medical condition of the "adequate" soldier did not warrant separation from the service earlier than the 24-month termination date under conditions other than honorable or for reasons of physical disability. Once the range of factors comprising "performance" has been determined in this sample, we can then compare the same factors in various groups of subjects with varying degrees of disability in specific disease entities who meet the same criteria as the nondisease control sample. This would include soldiers with asthma, peptic ulcer, rheumatic heart disease, and other entities, whose performance warranted an honorable discharge after 24 months of military service and, in no case, a discharge directly attributable to the disability.

It is recognized that the criteria of adequate performance employed in this investigation (capability of performing military service for a 24-month period and receipt of an honorable discharge rather than a discharge for administrative reasons or for physical disability), are most permissive and all inclusive. It is further recognized that such criteria do not necessarily in and of themselves indicate a degree or manner of performance other than at a minimal level (put in time; not get into any real difficulty and get out). In terms of the large,

over-all military manpower requirements, however, a soldier who can meet these criteria is, generally speaking, adequate for military service and can contribute materially to a military mission, whereas the one who cannot meet the criteria cannot contribute to the mission. Within such a large group, of course, there will be found varying degrees of adequacy of performance and medical capability in sufficient number to satisfy special military requirements such as those for noncommissioned officers or for technical specialists.

For this investigation, military performance is considered to be reflected in a host of discrete elements such as promotions or times on sick call, each representing a facet of military life that may be influenced to varying degrees by the traits, abilities, and personal characteristics the subject brings with him to military service. The distribution of performance factors as well as background characteristics in a sample group of Army inductees is the subject of this article. Subsequent articles* will compare groups of soldiers with specific medical conditions against this baseline group for selected factors involved in military performance—each clinical entity group meeting, of course, the same fundamental criterion of adequate performance, the completion of military service under honorable conditions.

THE BASELINE SAMPLE

The data for part I of this report were obtained from the medical and personnel records of a sample group of 710 enlisted men who entered the military service as inductees no earlier than 1 July 1955, served 2 years (their draft obligation) leading to an honorable discharge, and did not possess a physical disability that would warrant early separation on the basis of a medical discharge. These records were made available by the U.S. Army Records Center, St. Louis, Missouri. Collection of data was halted at 710 cases when it was found that there was no appreciable difference in the distributions from that found in 500 cases.

*The next 3 issues of the *Journal* will include additional articles by the authors on "Medical Impairments and Military Effectiveness." Subtitles of these are "Performance and Disposition of Inductees Admitted to Sick Report: Plan of Study and Analysis of Results," part II; "Performance and Disposition of Inductees with Diagnoses of Bronchial Asthma, Chronic Otitis Media, Epilepsy, Duodenal Ulcer, and Knee Injuries," part III; and "Performance and Disposition of Inductees with Diagnoses of Rheumatic Fever and Rheumatic Heart Disease, Herniated Nucleus Pulposus, Anxiety Reaction, Abdominal Hernia, Pilonidal Sinus, and Varicose Veins; Considerations for Further Research," part IV.—EDITOR

Data Processing

Information from the personnel and medical records of the control sample was abstracted, coded, and punched on machine record cards in order to facilitate analysis. Two experienced record analysts abstracted and coded all the records in accordance with instructions in special coding manuals for standardization of the abstracted and coded data. Where some information was not available in the records at St. Louis, it was necessary to obtain this either from the personnel record form (DA Form 20), which had been forwarded to the soldier's military reserve district, or from the Veterans Administration in instances where a soldier had filed a claim with that agency. The data on the abstract sheets were reviewed and completed by the Department of Physical Standards Research, Walter Reed Army Institute of Research (WRAIR). After the information on the code sheets had been punched on machine record cards, frequency runs of each factor were made by the Statistics and Tabulating Division of the Walter Reed Army Medical Center.

Presentation of Data

The data collected will be presented in either tabular or graph form for material thought to be of particular significance or interest and simply noted for points of lesser interest or significance. For ease of discussion, the first 6 points, which represent nonmilitary factors or elements in the soldier's life that he brought with him to military service, have been grouped together. Then, material that is, for the most part, strictly military in nature and that may or may not have been influenced by the preceding nonmilitary factors, has been similarly grouped. Certain relationships between items will be discussed later.

The number of men for whom information was available varied slightly from item to item. The frequency distribution and other tabulations are based on the number of men for whom information was available on the material in question.

Personal Characteristics of the Sample Group

Age at entry to military service. Age range of personnel in this sample was from 17 to 29 years with a median of 22.2 years and a mode of 22 years.

Race. The number in the sample by race is generally proportional to the frequency by race in the general population and also to the distribution found in the military service. Insofar as race is concerned, it appears that the sample used in this study is reasonably representative.

Marital status. Approximately two thirds of the soldiers in the sample are single and about one third are married. A few are divorced, widowed, or separated.

State or area of birth. The frequency distribution by state or area of birth is

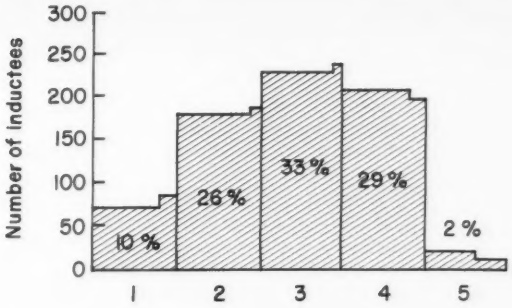

Figure 1. Mental group based on Armed Forces Qualification Test scores of 708 inductees.

generally in agreement with the nationwide population distribution. This would indicate that the sample employed in this study is adequately representative.

Mental group. Mental group placement based on scores achieved on the Armed Forces Qualification Test (AFQT) by the sample group is shown in figure 1. Subjects obtaining an AFQT score placing them in group 5 are not normally accepted for induction unless their educational level and overt behavior suggest that a low score was deliberately obtained. The 16 men shown on the graph as having received a mental group 5 score were apparently administratively acceptable for this reason.

Civilian education. The frequency distribution for this factor is shown in figure 2.

Military Characteristics of the Sample Group

Total service in months. It was mentioned previously that the criterion for selection of the sample group was 24 months of military service under honorable conditions. The range of total service is from 20 to 24 months. Those few

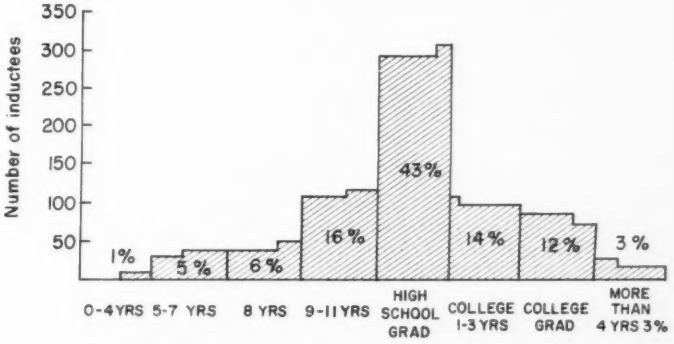

Figure 2. Civilian education of 710 inductees.

inductees who, for one reason or another, served longer than 24 months were included in the 24-month group. Those soldiers who served from 20 through 23 months are considered as meeting the criterion of 24 months' service since, in every case, they were released from active service earlier than the scheduled date only for justifiable reasons such as to enter college or to accept a specific position in industry. In all cases, release before completion of 24 months' service was on the basis of an honorable discharge and in no case for physical disability.

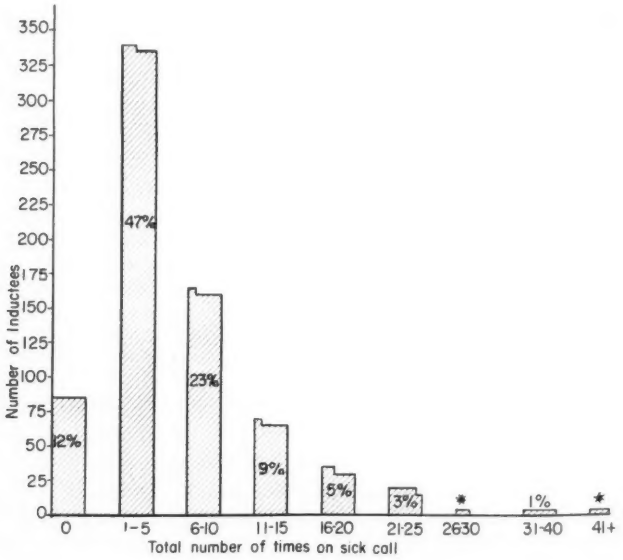

Figure 3. Number of times 710 inductees reported to sick call. (*=less than 1/2 of 1%)

Number of transfers. This factor included transfers for all reasons—training, en route to new assignment, pipeline, and routine transfer. The range of this factor is from 2 to 13 transfers, with a median of 4.17 transfers and a mode of 4 transfers. In each instance, a transfer was considered to have taken place where there was a change in the morning report showing reassignment of the soldier from one major organizational unit to another. Reassignment from one company to another company within the same regiment was not considered a transfer since it took place within the same organizational element.

Number of times on sick call. It is recognized that a number of factors may affect the frequency with which a soldier goes on sick call. For example, a soldier could report on sick call frequently for continued and legitimate treatment of a dermatologic condition, making his total sick-call visits relatively high. Another soldier could report on sick call repeatedly with no demonstrable disease condition, perhaps simply as a "sick call rider" to avoid assignment to an onerous

detail. Each visit of each soldier, however, is reported as 1 time on sick call. From figure 3 it is interesting to note that the majority of soldiers have been on sick call from 1 to 5 times.

Days lost for medical reasons. Insofar as this study is concerned, days lost for medical reasons were considered to be those days on which the soldier was not present for duty because of hospitalization, quarters status, or sick leave. The number of days lost for medical reasons by each soldier was totaled for his entire tour of military service (fig. 4). For the sample the range was from zero to 236 days, with both the median and mode at zero days. It must be remembered that selecting the sample group on the basis of 24 months' military service without discharge for medical reasons results in a comparatively "healthy" sample.

Final grade held. Relatively few soldiers (4%) were discharged as privates. The majority (60%) attained the grade of corporal. Of the remainder, 34% were discharged as private first class and 2% as sergeant.

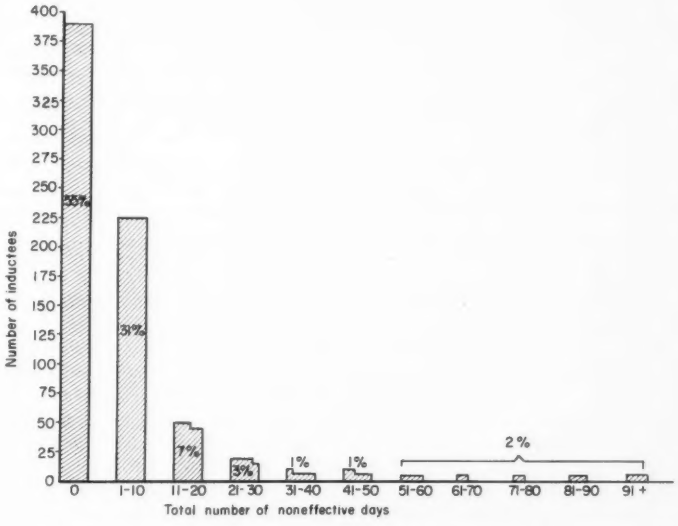

Figure 4. Total days lost for medical reasons by 710 inductees.

Decorations. It was found that very few soldiers, about 11%, did not receive a decoration of some type during their military service. More than 50% of them received 2 decorations, the Good Conduct medal and the Marksman or Sharpshooter badge. This again could be affected by one criterion used for selection of the sample in that the soldier must have received an honorable discharge in order to be included in the sample.

Number by branch of service. These data show that virtually all components of the military, both the arms or branches and the services, are represented in the sample. The frequency distribution by arms and services follows closely the distribution found in the Army at large and is a further indication that the

sample is generally representative of all inductees meeting the criteria for this study.

Number by MOS. Data collected show that the distribution of the sample approximates rather closely general Army distribution by military occupational specialty (MOS). While certain MOS's are not held by any of the men in the sample, this is undoubtedly influenced by the fact that these MOS's usually require higher noncommissioned grades or prolonged specialized training, which is given only to men who can be expected to serve for longer periods than the 24-month period of this sample. The frequency distribution by MOS does, however, indicate the general adequacy of the sample.

Area of MOS performance. A breakdown of the sample into 3 groups: (1) service all within the continental United States, (2) service overseas, and (3) service both overseas and within the continental United States, provides approximately an equal number of subjects in each group.

Time lost—disciplinary. This item represents the time lost from a duty status for disciplinary reasons. It most probably represents minor disciplinary breaches, usually punished by confinement to the immediate company area rather than the post stockade. The fact that all men in the sample received an honorable discharge undoubtedly served to reduce the number who lost time for disciplinary causes. Only 12 men out of 710 in the sample fell in this category.

Courts-martial. The number of disciplinary cases punishable by courts-martial was quite small considering the size of the sample. This is to be expected since all soldiers in the sample met the criterion of receiving an honorable discharge. Thus, those who did receive a court-martial were not guilty of offenses of sufficient magnitude to warrant other than an honorable discharge. In the sample, there were 23 summary, 1 general, and 7 special courts-martial.

Longest period in single MOS. The data collected show a range of from 7 to 24 months and a median of 17 months.

Total ratings for efficiency and for conduct. This item represented the total number of ratings all men in the sample received for conduct and efficiency. Each subject received approximately 4 ratings for conduct and 4 for efficiency. It is very interesting to note that practically all ratings, both for conduct and efficiency, are either superior or excellent. It does not seem likely that this unusual consensus results exclusively from the criteria used to select the sample. Rather, this frequency distribution may result from exceedingly poor implementation of existing regulations on the subject. These data would suggest that the rating procedures, as presently employed, do not adequately describe the soldier's conduct and efficiency and that the entire rating process warrants close study.

DISCUSSION

The material presented is intended merely to indicate the frequency distributions of a number of factors, obtainable from the soldier's records, relevant to considerations of military performance. No attempt was made to identify definitively specific elements or groups of elements as being the most significant vectors or indexes of the adequacy of military performance. In addition to providing frequency distributions for selected factors against which subsequent groups of

Table 1. ***Grade attained and Good Conduct medal. Percentage distribution****

Good Conduct medal awarded	*E–1 or E–2 (Pvt)*	*E–3 (Pfc)*	*E–4 (Cpl or Sp3)*	*E–5 (Sgt or Sp2)*
Yes	10	64	69	(10)
No	90	36	31	(4)
Total (%)	100	100	100	
Total number of cases	31	239	421	14

*Figures in parentheses are numbers of cases rather than percentages.

soldiers with specific disease entities might be compared, however, an attempt was made to determine what relationships might exist between certain of the factors.

Since it was believed that there was a logical reason for a relationship between the grade a soldier attained upon completion of 24 months of military service and his conduct as measured by the award or lack of award of a Good Conduct medal, this matter was explored. The decoration-grade relationship is shown in table 1. It is interesting to note that in every grade, other than that of private, approximately

Table 2. ***Mental group and sick call. Percentage distribution****

Times on sick call	*Mental group I*	*Mental group II*	*Mental group III*	*Mental group IV*	*Mental group V*
0	10	13	14	9	(2)
1	21	14	13	10	(2)
2	15	10	12	10	(1)
3	10	12	10	9	(2)
4	2	7	8	8	(3)
5	10	7	3	6	(1)
6–10	21	18	24	26	(2)
11–15	5	13	8	9	(1)
16–20	3	4	5	6	–
21 or more	3	2	3	7	(2)
Total (%)	100	100	100	100	
Total number of cases	72	180	230	208	16

*Figures in parentheses are numbers of cases rather than percentages.

Table 3. ***Sick call and grade. Percentage distribution****

Times on sick call	*E–1 or E–2 (Pvt)*	*E–3 (PFC)*	*E–4 (Cpl or Sp3)*	*E–5 (Sgt or Sp2)*
0	–	13	12	(4)
1	3	11	15	(4)
2	6	10	12	–
3	6	10	10	(3)
4	12	7	7	–
5	–	4	7	(1)
6–10	26	26	21	(1)
11–15	15	8	10	–
16–20	15	6	3	–
21 or more	17	5	3	–
Total (%)	100	100	100	
Total number of cases	34	238	422	13

*Figures in parentheses are numbers of cases rather than percentages.

twice as many soldiers in the grade were awarded the Good Conduct medal as were not. However, privates were much less likely to receive the Good Conduct medal than men in the higher grades.

Certain other relationships between factors were found. When the mental group was plotted against the number of times on sick call, it was found that a slight relationship significant at the .05 level existed in that the higher the mental group, the less likely the soldier was to have been on sick call more than 5 times during 24 months of military service (table 2). One possible interpretation of this relationship would be that if the number of sick call visits is a measure of the adequacy of military performance, the more intelligent the soldier as measured by AFQT scores, the more adequate his military performance was likely to be. Whether or not the number of times a soldier, reports on sick call is a truly valid index of degree of adequacy of military performance is debatable, and proponents on either side of the question can be found. Whether or not a soldier who reports on sick call more than 5 times during a 24-month period, when the median for attendance on sick call is 4.5 times, can be called a "sick book rider" is also debatable. If sick call visits are a measure of adequacy of military performance, however, and if the soldier who reports on sick call more than 4.5 times in a 24-month period is, in fact, a "sick book rider,"

then it would follow that intelligence, or whatever phenomenon is measured by the AFQT, is an indicator of potential adequacy of military performance. All other factors being equal, the higher the AFQT score the more adequate will be the military performance.

Pursuing the matter of sick call further, an analysis of times on sick call as related to grade was made. After plotting the data for these factors, it was found that a significant relationship did exist and that privates (those soldiers in the sample who served 24 months without receiving a promotion) were more likely than PFC's or corporals to report more frequently on sick call (table 3).

Another relationship explored and found to be significant at the .05 level was the one existing between mental group and final grade held (table 4). In plotting the distribution of these factors, it was determined that the higher the mental group to which the soldier belonged, the greater was his likelihood of being promoted to the grade of corporal or higher. Once again it would appear that, since promotion is presumably an index of adequacy of military performance, the higher the AFQT the greater the potential for a higher caliber of military performance.

It should be pointed out that the 3 relationships discussed above are not independent and any comparison made between relationships must be done cautiously. The high degree of relationship that might be anticipated between level of civilian education and mental group was borne out in an analysis of these 2 factors. The analysis showed very clearly that the higher the completed grade in school, the higher the AFQT score achieved.

Table 4. ***Mental group and final grade. Percentage distribution****

Final grade held	*Mental group I*	*Mental group II*	*Mental group III*	*Mental group IV*	*Mental group V*
E–1 or E–2 (Pvt)	1	2	3	10	(1)
E–3 (PFC)	14	27	32	46	(8)
E–4 (Cpl or Sp3)	78	68	64	43	(7)
E–5 (Sgt or Sp2)	7	3	1	1	–
Total (%)	100	100	100	100	
Total number of cases	72	180	231	208	16

*Figures in parentheses are numbers of cases rather than percentages.

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Analysis of the data obtained on the sample to discover relationships that might significantly exist revealed a number of apparently unrelated factors in the present sample. For historical purposes these "nonrelationships" are merely listed:

a. Mental group by number of transfers
b. Number of times on sick call by MOS (both combat and administrative)
c. Rank and Good Conduct medal by days lost for medical reasons
d. Final grade held by days lost for medical reasons
e. Marital status by number of times on sick call
f. Age by number of times on sick call
g. Mental group by branch of service
h. Days lost for medical reasons by MOS (both combat and administrative)
i. Mental group by physical fitness scores

No mention has been made in this report of other material collected on the current sample since it was believed that this type of information could not be considered in the category of performance factors. This category includes information such as height and weight at entrance into and at separation from military service and physical fitness test scores.

(Part II of this article will appear in the July issue. All references will be found at the end of part IV, in the September issue.)

THAT CROWDED LITERATURE

The world of medical literature is crowding even more rapidly than the world of people. There seems to be so much that has to be written and published that new journals must be created and older journals must grow thicker. And, to find his way to what he needs in the thicket of pages, the searching reader must be guided by abstracts and journals of abstracts. Soon there will be guidebooks for the journals of abstracts, to be called *indices indicum indecorum*. The medical writer who wishes to see his work imprinted must apply to boards of editors whose policies or interests may be as mysterious as the reasons for rejection by one or acceptance by another.—LEONARD D. ROSENMAN: Hugh of Lucca and the Literary Virus. *The New England Journal of Medicine*, Dec. 24, 1959.

Case for Diagnosis

ROBERT D. NEUBECKER, M.D.

A 23-year-old white woman, gravida 1 para 1, delivered a full-term infant after an uncomplicated gestation. Three weeks post partum she began to bleed heavily from the vagina, soft masses were palpable in the abdomen, and material obtained by dilatation and curettage was suggestive of tumor. Hysterectomy and bilateral salpingo-oophorectomy were performed.

Diagnosis? Please turn the page.

From Armed Forces Institute of Pathology. This month's Case for Diagnosis is AFIP Accession No. 767523, contributed by Letterman General Hospital, San Francisco, Calif.

Discussion and Diagnosis

The ovaries showed bilateral lutein cysts, and the uterus a choriocarcinoma. A small metastatic focus was present in the left broad ligament. The patient is well at present, 2 years and 9 months after operation.

Lutein cysts of the ovary may be associated with otherwise normal pregnancy, hydatidiform mole, and choriocarcinoma. They may become quite large and tend to involute spontaneously after delivery of the mole or fetus.

Reference. Novak, E. and Koff, A. K.: Ovarian and pituitary changes associated with hydatidiform mole and chorioepithelioma. *Am. J. Obst. & Gynec.* 20: 481–499, Oct. 1930.

NEONATAL INFECTION

Neonatal mortality of significant degree is present today as it was 10, 20, and 30 years ago. Despite newer and supposedly better nursery physical plants and despite frequent use of antibiotics and oxygen and other therapeutic agents a rather large number of newborns die as a result of infection.—LEON N. BRANTON: Neonatal Mortality With Special Reference to Infectious Causes of Death. *American Journal of the Medical Sciences*, December 1959.

Going to the Hospital

CAPTAIN LEONARD BERLOW, USAF, MSC

A LITTLE BOOK called "Going to the Hospital" is making the difference between tears and cooperation from young patients of this hospital. Designed to be read by—or to—children from 5 to 10 years of age a few days before admission to the hospital, the booklet tells the child that he is to be a patient, and in story form describes what will happen at the hospital. Mrs. Jeb Tracy, an American Red Cross volunteer worker at the hospital, has illustrated the booklet with cartoons, which the children are encouraged to color with crayons.

Informed children make better patients. In the past, children were often completely unprepared, at least psychologically, to cope with a hospital situation. Some parents, uncertain themselves of exactly what was to happen, disguised the facts or avoided telling the child what he could expect, leaving the entire burden of explanation to the doctors and nurses at the hospital. Children who were to undergo surgery were often the least prepared.

"Going to the Hospital" gives children the facts about laboratory procedures, x-rays, and other diagnostic measures. It mitigates the parents' departure, often the act that upsets children most. In the description of a tonsillectomy, which most children face sooner or later, it tells in child language what can be expected in the operating room.

Of course, not every hospital admission can be anticipated. But hospital personnel at this hospital have reported that even leafing through the booklet at admission time helps to relieve "hospital jitters." Nurses have stated that there is a noticeable change in the behavior of pediatric patients when they know what is to take place.

The text of "Going to the Hospital," and the cartoon illustrations, reduced in size, are reproduced on the following pages. Some details described in the text—ward size, observation windows, dining facilities—may vary from hospital to hospital, but basic procedures remain the same.

From USAF Hospital, Wright-Patterson Air Force Base, Ohio.

GOING TO THE HOSPITAL

GUESS WHAT? YOU'RE GOING TO THE HOSPITAL! YES, THE DOCTOR SAYS YOU HAVE SOMETHING THAT NEEDS FIXIN', AND THE BEST PLACE TO TAKE CARE OF IT IS IN THE HOSPITAL.

HAVE YOU EVER HAD TO STAY IN A HOSPITAL BEFORE? THINK HARD. SURE YOU DID, WHEN YOU WERE BORN. YOU WON'T BE ABLE TO REMEMBER THAT FAR BACK, BUT ALL THE DOCTORS AND NURSES TOOK REAL GOOD CARE OF YOU. THAT'S ONE BIG REASON YOU'VE GROWN BIG AND STRONG. THEY HELPED YOU GET A GOOD START IN LIFE.

FOR THOSE OF YOU WHO HAVEN'T BEEN A HOSPITAL PATIENT, OR HAVE FORGOTTEN ABOUT THE HOSPITAL, WE'D LIKE TO TELL YOU WHAT WILL HAPPEN WHEN YOU COME TO STAY WITH US AT WRIGHT-PATTERSON AIR FORCE BASE. THIS BOOK WILL TAKE YOU ON A LITTLE VISIT THROUGH THE HOSPITAL AND LET YOU MEET ALL THE PEOPLE WHO WORK HERE.

YOU CAN HAVE LOTS OF FUN COLORING THE PICTURES IN THIS BOOK. WHEN YOU'VE FINISHED COLORING THEM YOUR MOM AND DAD WOULD LOVE TO SEE HOW WELL YOU DID. WE KNOW THE DOCTORS AND NURSES WILL ENJOY SEEING THEM TOO.

NOW, LET'S GET STARTED WITH OUR HOSPITAL STORY.

YOU HAVE PROBABLY BEEN INSIDE THIS HOSPITAL BEFORE. REMEMBER THE TIME YOU CAME WITH MOM FOR SHOTS? HERE'S A PICTURE OF THE HOSPITAL FOR YOU TO COLOR.

ALL ALONG THE FIRST FLOOR THERE ARE MANY INTERESTING PLACES. ONE OF THESE IS CALLED THE LABORATORY. THAT SOUNDS LIKE A PLACE WHERE THERE ARE LOTS OF TEST TUBES AND ALL SORTS OF EXPERIMENTS GOING ON. IF THAT'S WHAT YOU THOUGHT, YOU WERE EXACTLY RIGHT! YOU KNOW, IT'S AMAZING HOW MUCH DOCTORS CAN LEARN FROM THE LIQUIDS INSIDE THE BODY. WHICH ONES CAN

YOU THINK OF THAT ARE INSIDE YOUR BODY? WELL, ONE OF THE MOST IMPORTANT IS BLOOD. BLOOD TELLS THE DOCTOR IF THERE ARE ANY GERMS OR DISEASE BUGS CAUSING TROUBLE. HE MUST ALSO FIND OUT IF THERE IS ENOUGH BLOOD IN THE TUBES THAT CARRY THE BLOOD FROM YOUR HEART TO ALL PARTS OF YOUR BODY. THE DOCTOR MUST LOOK AT THIS BLOOD THROUGH A POWERFUL MAGNIFYING GLASS CALLED A MICROSCOPE TO MAKE SURE ABOUT THOSE TINY BUGS.

NOW THE PROBLEM IS HOW TO GET A LITTLE BIT OF YOUR BLOOD TO EXAMINE. HOW WOULD YOU DO IT? SURE, STICK A LITTLE PIN IN YOUR FINGER AND OUT POPS A DROP OF BLOOD. THAT PIN PRICK KIND OF HURTS, BUT IN JUST A FEW SECONDS IT'S OVER. SOMETIMES OUR DOCTOR FRIENDS NEED MORE THAN THAT ONE DROP OF BLOOD. WHAT NOW? THIS MAY MEAN A STICK IN YOUR ARM NEAR THE ELBOW. OUT COMES SOME BLOOD INTO A TUBE. THIS TAKES SLIGHTLY LONGER AND HURTS A LITTLE MORE THAN THE FINGER PRICK. HONEST THOUGH, IT WON'T HURT HALF AS MUCH IF YOU'LL SIT STILL AND BE AS BRAVE AS YOU CAN. WHEN YOU HAVE TIME, COLOR THE PICTURE OF THE DOCTOR LOOKING THROUGH HIS MICROSCOPE.

IS URINE A NEW WORD FOR YOU? THAT'S THE WORD DOCTORS AND NURSES USE FOR WEE-WEE OR WHEN YOU MAKE WATER IN THE TOILET. YOU WILL PROBABLY HAVE TO WEE-WEE IN A BOTTLE SO THE DOCTOR CAN MAKE SURE IT'S ALRIGHT. THERE'S NOTHING TO THIS AND IT'S FUN TO TRY AND FILL UP THE BOTTLE.

YOU WILL MAKE ONE MORE STOP ON THE FIRST FLOOR OF THE HOSPITAL. THAT'S IN X-RAY—OR THE BIG NAME FOR IT IS RADIOLOGY (RA-DI-OL-O-GEE). HERE'S THE PLACE WHERE ANOTHER DOCTOR FRIEND OF YOURS IS GOING TO TAKE A PICTURE OF YOUR CHEST AND STOMACH. 1-2-3 AND THE PICTURE IS TAKEN. AFTER YOU HAVE GONE THE DOCTOR WILL LOOK AT THE PICTURE TO SEE HOW ALL THE LITTLE MACHINES LIKE YOUR HEART AND STOMACH ARE WORKING. THIS PLACE IS A LOT OF FUN, SO LET'S COLOR A PICTURE OF OUR TRIP TO X-RAY.

IT'S TIME TO GO TO THE PLACE WHERE YOU WILL STAY WHILE YOU'RE IN THE HOSPITAL. THIS IS ON THE THIRD FLOOR OF THE HOSPITAL AND IS CALLED A NURSING UNIT. THERE ARE LOTS OF OTHER KIDS HERE TOO. SOME OF THEM HAVE BANDAGES ON BECAUSE THEY HAVE HAD A BUMP OR BRUISE. OTHERS MAY BE WALKING AROUND AND NOT LOOK SICK. STILL OTHERS MAY BE IN BED AND NOT FEELING WELL AT ALL.

NOW THE NICE NURSE WILL TAKE YOU

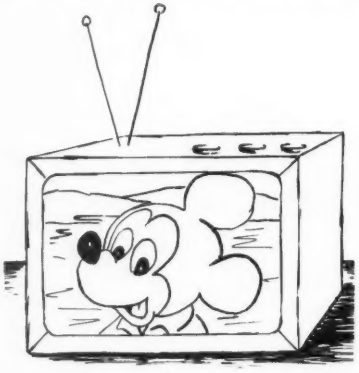
TO A ROOM WITH 2 OR 3 BEDS IN IT. GOOD, THERE ARE OTHER KIDS RIGHT IN MY ROOM TO KEEP ME COMPANY. THIS IS A FUNNY ROOM THOUGH. A BIG GLASS WINDOW LOOKS RIGHT OUT ONTO THE HALL. NOW I SEE WHY IT'S THAT WAY—IT LETS THE NURSE LOOK IN THE ROOM TO SEE HOW WE'RE ALL GETTING ALONG. THIS IS NEAT. LOOK OVER THERE. A SPECIAL SORT OF A TABLE OR STAND FOR MY VERY OWN. I'LL PUT ALL MY BOOKS AND TOYS IN IT SO THEY'LL BE NEARBY.

EACH KID IS IN PAJAMAS. SO, THAT'S THE FIRST THING WE MUST DO. MOTHER OR DAD WILL USUALLY HELP GET THEM ON. NOW THAT PAJAMAS ARE ON AND I HAVE MY BED AND STAND ALL SET, IT'S TIME TO SAY GOODBYE TO MOM AND DAD.

OH YES, DIDN'T WE TELL YOU THAT IN THE HOSPITAL WE STAY WITH THE NURSES AND DOCTORS AND OTHER KIDS? MOM AND DAD CAN COME BACK OFTEN DURING VISITING HOURS.

BOY, THIS IS GREAT STAYING BY MYSELF WITH ALL THESE OTHER BOYS AND GIRLS! I'LL MISS MOM AND DAD, BUT I KNOW ALL THESE NICE PEOPLE WILL TAKE REAL GOOD CARE OF ME. BESIDES I'VE GOT A LOT OF LOOKING AROUND TO DO.

LOOK AT THAT BED. IT LOOKS LIKE IT'S A MILE HIGH! REALLY IT ISN'T, BUT IT IS A LOT HIGHER THAN THE ONE YOU HAVE AT HOME. WONDER WHY? WELL, IT'S TO HELP THE NURSES AND DOCTORS WHEN THEY TAKE CARE OF YOU IN BED. IT'S JUST SO THEY WON'T HAVE SO FAR TO BEND OVER. WHAT ARE THOSE FUNNY LOOKING BARS DOING AROUND THAT KID'S BED? DID YOU EVER FALL OUT OF YOUR BED AT HOME? IF YOU DID YOU PROBABLY GOT A PRETTY BIG BUMP. WELL, THESE BARS KEEP PATIENTS FROM FALLING OUT OF BED. THEY EVEN USE THEM FOR BIG PEOPLE TO KEEP THEM SAFE TOO. IF THE NURSE PUTS THESE ON YOUR BED DON'T, FOR GOODNESS SAKE, TRY TO CLIMB OVER THEM. YOUR NURSES WILL HELP YOU IN AND OUT OF BED.



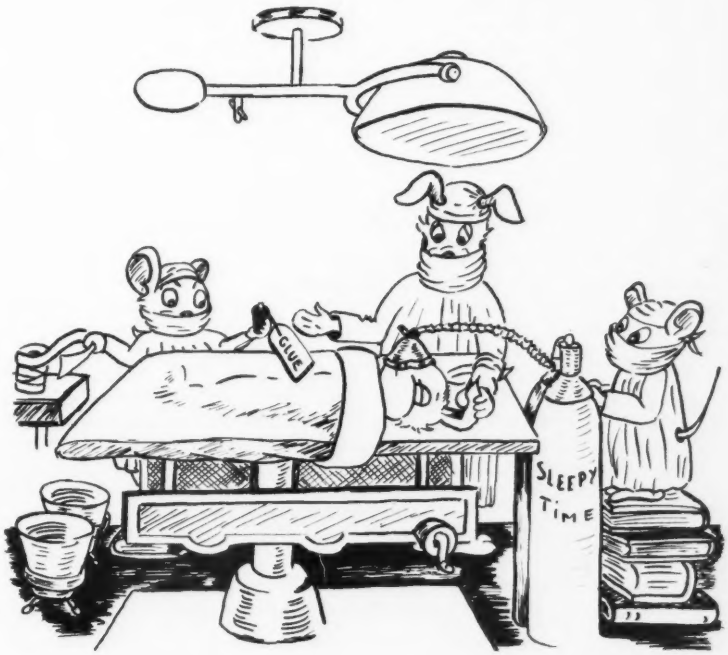
LET'S LOOK AROUND SOME MORE. GOSH, DID YOU EVER SEE SO MANY TELEVISION SETS? YOU CAN STILL WATCH YOUR FAVORITE TV PROGRAMS RIGHT HERE IN THE HOSPITAL. THIS IS GETTING TO SEEM MORE LIKE HOME ALL THE TIME. HAVE SOME MORE FUN AND COLOR THE PICTURE OF MICKEY MOUSE ON TV.

JUST 'CAUSE WE'RE IN THE HOSPITAL DOESN'T SAY WE'RE NOT HUNGRY. LET'S EAT. SOME OF THE BOYS AND GIRLS WHO MUST STAY IN BED GET THEIR FOOD SERVED RIGHT IN BED ON A SWELL TRAY. THE NURSE LETS THE OTHERS GO TO A DINING ROOM DOWN THE HALL. THIS IS A GOOD CHANCE TO SHOW THE NICE NURSE HOW WELL I CAN EAT—AND ALL BY MYSELF TOO!

THERE CERTAINLY ARE A LOT OF BUSY

GOING TO THE HOSPITAL

PEOPLE WORKING HERE. GEE, THE DOCTORS HAVE LOTS OF KIDS TO TAKE CARE OF. HERE COMES THE DOCTOR TO SEE ME NOW. I KNOW HE'S THE DOCTOR BY THE LONG WHITE COAT HE WEARS. THAT THING HE PUTS IN HIS EARS TO LISTEN TO ME BREATHE MAKES ME LAUGH. IT'S COLD WHEN IT TOUCHES MY TUMMY. WHAT DO THEY CALL THAT THING? IT'S A BIG NAME, BUT LET'S TRY TO SURPRISE THE DOCTOR AND SAY IT FOR HIM—STETH-O-SCOPE. GOOD! IT OUGHT TO BE FUN TO COLOR THE PICTURE OF MY DOCTOR USING HIS STETHOSCOPE.



YOU MAY HAVE WONDERED WHAT IN THE WORLD THE DOCTOR IS LOOKING FOR WITH THAT FUNNY LOOKING FLASH-LIGHT. WHEN HE LOOKS IN YOUR EARS IT'S TO SEE IF THE LITTLE HEARING MACHINERY IS WORKING PROPERLY. THEN HE WANTS TO LOOK IN YOUR NOSE AND THROAT. THE DOCTOR CAN TELL ALL SORTS OF THINGS ABOUT YOUR HEALTH BY MAKING YOU STICK OUT YOUR TONGUE AND SAY, "AHHH."

ARE YOU ONE OF THE KIDS WHO MUST HAVE AN OPERATION? THAT'S A BIG WORD ALL OF US HAVE HEARD BEFORE. BELIEVE IT OR NOT YOU HAVE OPERATED ON SOMETHING YOURSELF! REMEMBER FIXING THAT LOOSE BOLT OR SCREW ON YOUR BIKE—WELL THEN, YOU REALLY OPERATED ON IT. MAYBE YOU HAVE A LOOSE BOLT OR SCREW AND THE DOCTOR THINKS IT NEEDS TIGHTENING UP. THE ONLY WAY TO TAKE CARE OF IT IS TO OPERATE.

DO YOU KNOW BILLY ROGERS? HE'S A 6-YEAR-OLD BOY WHO WAS OPERATED

ON THE OTHER DAY. GUESS WHAT THE DOCTORS DID? TOOK OUT HIS TONSILS! WOULD YOU LIKE TO HEAR ALL ABOUT BILLY'S OPERATION? HERE'S WHAT HE TOLD US.

IT WAS EARLY IN THE MORNING WHEN THE NURSE CAME INTO MY ROOM. SHE SAID TODAY WAS THE DAY. I KNEW SHE MEANT THOSE NASTY OL' TONSILS WOULD BE COMING OUT. OH, OH, WHAT'S THAT? A SHOT? YES, BEFORE GOING TO THE OPERATING ROOM YOU'VE GOT TO GET ONE. DIDN'T HURT ANY MORE THAN THAT LAST POLIO SHOT.

NEXT CAME A KIND OF BED ON WHEELS AND SOME REAL NICE MEN IN GREEN SUITS LET ME LAY DOWN ON IT. BEFORE I KNEW IT I WAS RIDING ALONG THE LONG HALL TO THE ELEVATOR. DOWN WE WENT TO A REAL SHINY LOOKING ROOM. IT'S CALLED THE OPERATING ROOM. IT HAS THE BIGGEST LIGHT I EVER SAW. I THINK THE DOCTORS USE IT SO THEY CAN SEE BETTER. THERE'S A PICTURE OF THE OPERATING ROOM WITH ME IN IT FOR YOU TO COLOR.

THIS IS THE PART I LIKED BEST. A DOCTOR DRESSED IN A GREEN SUIT SHOWED ME A FACE MASK JUST LIKE THE KIND PILOTS USE. HE SAID I COULD WEAR IT FOR A WHILE IF I DID EXACTLY WHAT HE TOLD ME TO DO. WELL, I PUT IT ON AND GUESS WHAT? I SMELLED SOMETHING KIND OF SWEET, AND PRETTY SOON I WAS FAST ASLEEP! I FOUND OUT LATER THAT THIS WAS CALLED ANESTHESIA (AN-ES-THEEZ-YA). THE REASON YOU GO TO SLEEP IS SO IT WON'T HURT WHEN THE TONSILS COME OUT. WELL, THAT'S ALL I REMEMBERED UNTIL I WOKE UP A LITTLE LATER IN STILL ANOTHER ROOM. EVEN AFTER I WOKE UP, I'D SOON BE ASLEEP AGAIN. I REMEMBER THOUGH THAT MY THROAT HURT. I KNOW NOW THAT THE PLACE THEY OPERATE ON USUALLY HURTS FOR A WHILE.

ANYWAY, I REMEMBER SEEING MOM AND DAD FOR A FEW MINUTES. THEN BACK UPSTAIRS TO BED AND LOTS OF TV. MY THROAT STILL HURT, BUT IN A DAY OR SO I FELT GOOD AS NEW. THE DOCTORS AND NURSES LOOKED AFTER ME REAL WELL, AND BESIDES I HAD ALL THE ICE CREAM I COULD EAT. BEFORE I KNEW IT I WAS GETTING DRESSED READY TO GO HOME! NO FOOLIN' KIDS, IT WASN'T BAD AT ALL! SURE IT HURT A LITTLE, BUT NOW I KNOW I'M ALL BETTER.

WELL, THAT'S JUST ABOUT WHAT HAPPENS WHEN WE'RE OPERATED ON. SURE IT HURTS, BUT IT'S GOT TO BE DONE. SO, BEING BRAVE ABOUT IT HELPS A LOT.

OF COURSE, NOT ALL KIDS NEED OPERATIONS. THERE ARE PLENTY WHO ARE JUST PLAIN SICK AND NEED TO BE IN THE HOSPITAL TO GET BETTER.

WHEN YOU COME TO THE HOSPITAL HERE ARE SOME RULES YOU SHOULD REMEMBER:

1. TRY VERY HARD TO DO WHAT THE DOCTORS AND NURSES TELL YOU.
2. BE AS QUIET AS YOU CAN. SICK CHILDREN NEED LOTS OF REST, SO LET'S NOT DISTURB THEM.
3. DON'T MAKE A FUSS WHEN IT'S TIME FOR MOM AND DAD TO LEAVE. THERE ARE CERTAIN TIMES WHEN THEY MAY COME TO SEE YOU, AND THEN THEY MUST GO.
4. IF YOU DO NOT FEEL WELL, LET YOUR NURSE OR DOCTOR KNOW ABOUT IT AS SOON AS YOU CAN.

WE HOPE YOU ENJOYED YOUR TRIP THROUGH THE HOSPITAL IN THIS BOOKLET. NOW THAT YOU KNOW ALL ABOUT IT WE ARE SURE YOU WILL ENJOY YOUR STAY LOTS MORE WHEN YOU COME TO THE HOSPITAL.

Medical Interlingua

TRUDY DRUCKER, B.S.

WE determined to conduct a controlled comparative evaluation of the most commonly used agents in order to assay their respective advantages and disadvantages. *Translation: What else could we do with those samples?*

Exhaustive perusal of the available literature revealed the paucity of experimentation in this area. *Translation: Nothing in this week's J.A.M.A.*

Subjects were randomly selected without prior attention to inherent clinical variables. *Translation: We used anybody we could get.*

The double-blind method, although ideally suited to the rigidly supervised environment of the laboratory, is essentially unfeasible in clinical practice. *Translation: It's hard not to peek.*

The experiment was designed so that each patient served as his own control. *Translation: If he survived for a week we left him alone for a week.*

This technic appears to enjoy widespread clinical acceptance. *Translation: Nobody can figure out another way to do it.*

Side effects generally occur as a result of personal idiosyncrasy rather than as a predictable response to the dosage level. *Translation: Be careful with this stuff.*

Periodic determinations of variations in laboratory values revealed no significant alterations attributable to this modality. *Translation: He died in balance.*

The precise mechanism through which the response is mediated has not yet been defined. *Translation: We don't know what happened.*

An incidental finding was that the potency of the drug is not markedly affected by variations in the route of administration. *Translation: It's amazing where a kid can put a pill.*

Results in this series were sufficiently variable so that no definite conclusions could be drawn. *Translation: Somebody goofed.*

From Schering Corporation, Bloomfield, New Jersey. Reprinted with permission from *Mississippi Valley Medical Journal* 82: 59, January 1960.

In a general way our findings confirm those of previous investigators. *Translation: If you think we're going out on a limb, you're nuts.*

Clinical impressions have been used as the indices of evaluation since the magnitude of this series did not permit statistical interpretation. *Translation: Our math man wouldn't touch it.*

These preliminary findings appear to suggest the desirability of further studies among a larger series of patients. *Translation: Maybe we can get another grant.*

We gratefully acknowledge the cooperation, in many areas of this study, of the Blank Laboratories. *Translation: They paid us.*

TRIAL BY PROPAGANDA

The screaming headlines telling of 10,000 percent profits in the drug industry created the impression—whether intentionally or not—of an industry run by unconscientious profiteers to whom individual suffering is of no concern. Oftentimes, these hearings constituted, in fact, a public trial of the industry—a trial conducted not in the established traditions of due process, but a trial by publicity—where propaganda counts more than facts. . . . In this trial by investigation of the drug industry, little attention was paid to the balancing arguments of the defense. The public attention was constantly directed to profits on a single product of a single company—without relating these to the many thousands of products produced by the entire industry, or the overall costs of doing business. Hardly any reference was made to the high risks of this industry, which in 1958 had to test 114,600 substances before it could produce *40* marketable drugs. Little reference was made to the high degree of obsolescence in the drug industry—where one product can have 99% of the market one year, and only 3% two years later. No mention was made of the fact that while wages increased 70% between 1948 and 1958, and construction costs 64%, the increase in the wholesale drug prices was 3% only. No mention was made of the fact the Soviet Union, in which the profit motive does not exist, produced no single new drug since the Communist Revolution. And this being a monopoly investigation, it is surprising that nobody bothered to emphasize that more than 1,300 companies are engaged in the manufacturing of prescription drugs—with no one company accounting for as much as 10% of the total sales.—SENATOR ALEXANDER WILEY: Address to the Iowa Pharmaceutical Association's Annual Convention, Cedar Rapids, Iowa, March 8, 1960.

Technical Notes

The Wet Bulb-Globe Temperature Index

MASTER SERGEANT LIVINGSTONE R. HISLOP, JR., USA

PREVENTION OF HEAT CASUALTIES is of continuing importance to the medical services of the Armed Forces, particularly as applied to unseasoned basic trainees and other military personnel undergoing strenuous physical activity. In the past, dry bulb temperature, wet bulb temperature, and effective temperature (an index which combines temperature and humidity) have been used to determine the degree of environmental heat stress. These and other indexes, however, have proved complex and sometimes inadequate for military needs because they do not include the solar radiation factor.

In addition to air temperature, air movement, and relative humidity, radiant heat is also an important environmental factor which determines the amount of heat to which military forces may be subjected. All these factors should be considered when a program for the prevention of heat injury is being implemented. For this reason, a single, simply computed index of environmental heat stress which combines these 4 factors has long been needed by the Armed Forces.

On the basis of his extensive studies on the subject, Professor C. P. Yaglou of the Harvard University School of Public Health recently combined all four factors in a new index called the wet bulb-globe temperature (WBGT). Inherent advantages of this index are that the readings are easy to make and require no training or experience, the equipment is readily available and inexpensive, and the determinations do not involve elaborate charts or calculations as do other proposed indexes.

DESCRIPTION OF THE EQUIPMENT

The equipment required for determining the WBGT includes a black globe-thermometer assembly to measure radiant heat; a wet bulb assembly to measure temperature as affected by humidity and wind; a dry bulb assembly to measure air temperature; and a frame to support this equipment.

From U.S. Army Environmental Health Laboratory, Army Chemical Center, Maryland.

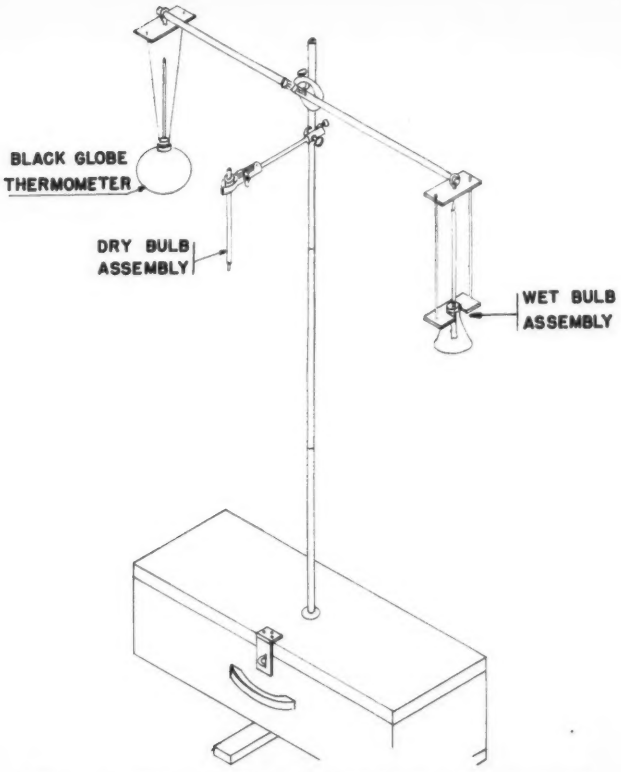


Figure 1. Diagram of the wet bulb-globe temperature kit.

A kit to house this equipment was designed and built at the U.S. Army Environmental Health Laboratory in 1957. The kit is portable, so that measurements can be made at the training site, compact, and requires a minimum of time and effort to assemble and disassemble. The black globe assembly is a 6-inch hollow copper sphere, painted flat black, containing a thermometer graduated in single degrees from 10° to 150° F, with its bulb at the center of the sphere. The wet bulb assembly consists of an aluminum hanger supporting a flask of distilled or clear water; a thermometer, also graduated in single degrees from 10° to 150° F, is suspended over the flask, its bulb covered with a wick immersed in the water. The dry bulb assembly is another thermometer, also indicating single degrees from 10° to 150° F, clamped to the frame. All 3 assemblies are suspended from or attached to the collapsible frame at a height of approximately 4 feet from the ground. This prototype kit is contained in a compartmented wooden case, which serves as a base for the collapsible aluminum frame and contains all parts of the assemblies and sufficient fittings, clamps, and flasks to assemble the kit. A diagram of the WBGT kit is shown in figure 1.

The assembled kit is placed in the open, away from trees, buildings, or other objects that could cast shadows on the kit or that would influence air movement. In the presence of strong solar radiation with low wind speeds, the dry bulb temperature should be recorded in a shady location. The kit should remain in position for at least 30 minutes before any readings are made, then all 3 temperatures are recorded at the same time. To compute the WBGT for greenish shades of fatigue uniforms, the following formula is used.

WBGT (in degrees F) = 0.7 × wet bulb temperature
plus 0.2 × black globe temperature
plus 0.1 × dry bulb temperature

Example: After 30 minutes in the sun, the following temperatures were recorded:

Wet bulb	78° F	× 0.7 = 54.6° F
Black globe	130° F	× 0.2 = 26.0° F
Dry bulb	104° F	× 0.1 = 10.4° F
		WBGT = 91.0° F

COMMENT

The following interpretation of the WBGT index is suggested:[1] When the WBGT index exceeds 80° F, discretion should be used in planning heavy exercise for unseasoned personnel. At 85° F such strenuous exercise as marching at standard cadence should be suspended for unseasoned personnel during their first 2 weeks of training and, after this period, continued only on a reduced scale; outdoor classes in the sun should also be avoided. At 88° F all physical training should be halted; but trained personnel after acclimatization can carry on limited activity up to 90° F WBGT for periods not exceeding 6 hours a day.

In 1958 the U.S. Army Environmental Health Laboratory distributed 10 prototype kits to preventive medicine officers for tests at selected installations in the United States, Panama, and Europe. Comments, criticisms, and submitted results are still being evaluated. Further experimental work is being conducted to simplify and improve the kit, to correlate the WBGT index with the incidence of heat cases, and to provide commanders and field medical officers with a simple, compact, and portable instrument for surveying and evaluating heat conditions. Through standardization of the kit and its resultant index, it is expected that commanders will be furnished information to guide local training operations for control of heat casualties.

SUMMARY

The wet bulb-globe temperature kit, designed to provide readings for air temperature, air movement, relative humidity, and radiant heat, is described. Readings are readily converted into an index by which heat tolerance for planned physical activity can be estimated.

ACKNOWLEDGMENT: The author wishes to express his appreciation to Professor C. P. Yaglou, Harvard University School of Public Health, whose original studies led to the development of the WBGT kit; to Dr. Anna M. Baetjer, Johns Hopkins University, and Colonel E. J. Dehne, MC, USA, Commanding Officer, U.S. Army Environmental Health Laboratory, for their professional advice and assistance in the preparation of this article; to Major T. R. Ostrom, MSC, USA, under whose direction the WBGT kit was developed; and to Captain D. M. Ginsberg, MSC, USA, who designed the kit.

REFERENCE

1. Etiology, Prevention, Diagnosis, and Treatment of Adverse Effects of Heat. Department of the Army, TB MED 175; Department of the Navy, NAVMED P–5052–5; Department of the Air Force, AFP 160–4–1, 7 Aug. 1957, pp. 11–12.

Simplified Electrode for Esophageal Electrocardiography

LIEUTENANT PETER STERNLIEB, MC, USN
ENSIGN ALBERT P. L. KNOTT, JR., MC, USNR

THE SUSPICION OF a posterobasal myocardial infarction in a patient in whom the conventional 12-lead electrocardiogram and posterior chest leads were not conclusively diagnostic prompted us to obtain esophageal tracings. An esophageal electrode was not available in this or in nearby hospitals. Delay in delivery of a commercial esophageal lead engendered a "do-it-yourself" approach.

A Grass electroencephalographic lead was threaded through a disposable polyethylene nasogastric tube. The jack of the EEG lead became the exploring electrode. The original EEG electrode was cut off, insulation of the wire removed for 4 cm, care being taken not to damage any of the 5 fine wire strands, and the bare strands simply wrapped around the "V" lead of the electrocardiograph. The braided strands were held in place by the screw of the Welsh chest electrode. Backward movement of the exploring electrode was prevented by 2 silk ligatures around the end of the polyethylene tube. The gastric tube was then marked with fingernail polish at 5-cm intervals (fig. 1).

In addition to the patient for whom the procedure was necessary, 4

From U.S. Naval Hospital, St. Albans, N.Y.

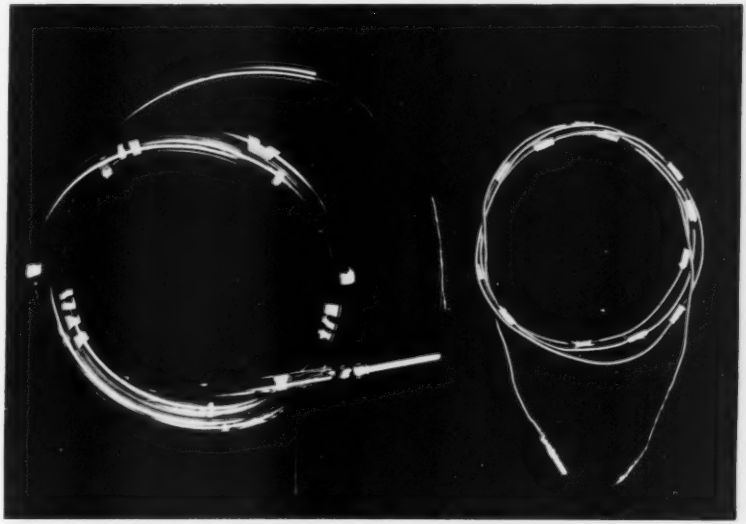


Figure 1. Left, nasogastric tube ensheathing the electroencephalographic lead. Right, unsheathed electroencephalographic lead with shortened electrode.

other patients were chosen for this pilot study. Two patients who experienced difficulty with a gastric tube were able to swallow the unsheathed electrode and its wire. In these instances a shortened electrode, 1.5 cm instead of 3 cm in length, was used. Such an electrode was easily prepared by cutting the soft metal with a pair of large scissors and then rounding off the edges with a file (fig. 1, right). Both types of esophageal leads were passed through the mouth rather than the nose.

Representative tracings of the esophageal leads taken at various levels from 2 patients are illustrated in figures 2 and 3. From a technical standpoint these tracings are considered adequate.

The total cost of the esophageal lead we devised was 38 cents. The electroencephalographic lead cost 15 cents and the disposable nasogastric tube 23 cents. Commercial esophageal electrodes are usually sold for 15 to 20 dollars.

SUMMARY

A simple and inexpensive method of obtaining esophageal electrocardiographic tracings is described.

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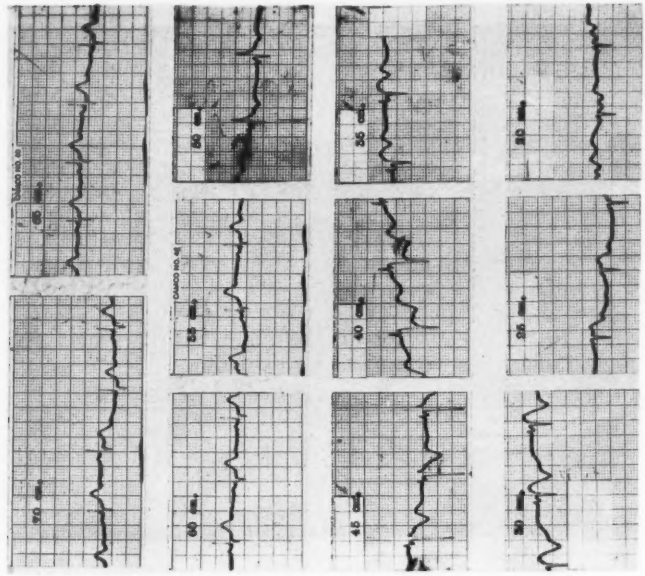

Figure 3. Esophageal tracing obtained with electrode swallowed by patient; illustrated in figure 1, right.

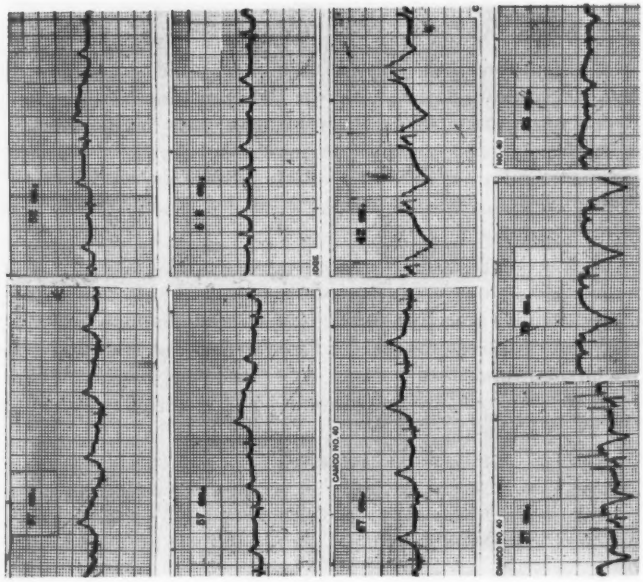

Figure 2. Esophageal tracing obtained with electrode shown in figure 1, left.

Military Medical News

AMA Section on Military Medicine Announces Annual Program

Colonel George H. Houck, AFRes, MC, chairman of the Section on Military Medicine, American Medical Association, has announced the program for the annual meeting of the section during the American Medical Association meeting in Miami Beach, 13–17 June.

The meetings will open 14 June, with a joint session with the Section on Diseases of the Chest and the Section on General Practice. A symposium on the medical aspects of chemical, biologic, and radiologic warfare, on 15 June, and a report by Dr. Frank B. Berry, Assistant Secretary of Defense (Health and Medical) on the activities of his office during the past year, together with a variety of papers ranging from snakebite therapy to open-heart technics, will be presented during the meeting. The complete program for 15–16 June is given below.

Wednesday, 15 June

Business Meeting (Election of Officers)

CHAIRMAN'S ADDRESS: TOTAL MEDICINE—A CHALLENGE TO MILITARY AND CIVILIAN PHYSICIANS—*Colonel George H. Houck, AFRes, MC,* Professor of Medicine and Director of Health Service, Stanford University, Palo Alto, Calif.

SYMPOSIUM ON THE MEDICAL IMPORTANCE OF CHEMICAL, BIOLOGICAL AND RADIOLOGICAL WARFARE—*Lieutenant General Leonard D. Heaton, MC, USA,* Surgeon General, U.S. Army, moderator.

MEDICAL ASPECTS OF CHEMICAL WARFARE—*Dr. Van M. Sim,* U.S. Army Chemical Warfare Laboratories, Army Chemical Center, Md.

THE PHYSICIAN'S ROLE IN THE DEFENSE AGAINST BIOLOGICAL AGENTS—*Colonel Dan Crozier, MC, USA,* Professional Division, Office of the Surgeon General, U.S. Army; *Colonel William D. Tigertt, MC, USA,* commanding officer, U.S. Army Medical Unit, Fort Detrick, Md.; and *Lieutenant Colonel Joseph W. Cooch, MC, USA,* Preventive Medicine Division, Office of the Surgeon General, U.S. Army.

RADIOLOGICAL WARFARE—CARE OF THE INDIVIDUAL PATIENT—*Lieutenant Colonel Carl L. Hansen, Jr., USAF, MC,* School of Medicine and Dentistry, University of Rochester, N.Y.

A LOOK TO THE FUTURE—*Brigadier General Joseph H. McNinch, MC, USA,* U.S. Army Medical Research and Development Command, U.S. Army, Washington, D.C.

DISCUSSION—to be opened by *Rear Admiral Bartholomew W. Hogan, MC, USN,* Surgeon General, U.S. Navy, and *Major General Oliver K. Niess, USAF, MC,* Surgeon General, U.S. Air Force.

Thursday, 16 June

EVALUATION OF INCISION AND SUCTION IN SNAKEBITE THERAPY—*Dr. T. W. Merriam, Jr.*, and *R. S. Leopold, Ph. D.*, Naval Medical Research Field Laboratory, Camp Lejeune, N.C.

STRESS OR FATIGUE FRACTURES OF THE FEMUR, TIBIA, FIBULA, CALCANEUS AND METATARSAL OF MARINE RECRUITS—*Captain Ralph W. Geise, MC, USN*, and *Lieutenant Daniel J. Enger, MC, USN*, U.S. Naval Hospital, Beaufort, S.C.

REITER'S SYNDROME: FACTORS IN DIAGNOSIS AND TREATMENT—*Captain Raymond Scalettar, MC, USA*, and *Dr. Darrell C. Crain, Jr.*, Walter Reed General Hospital, Washington, D.C.

EXPERIENCES IN THE TREATMENT OF ACQUIRED MITRAL VALVE DISEASE USING OPEN HEART TECHNIQUES—*Major Dean F. Winn, Jr., MC, USA*, Fitzsimons General Hospital, Denver, Colo.; *Major Clarence L. Anderson, MC, USA*, Fitzsimons General Hospital, Denver, Colo.; *Captain Herbert E. Reese, MC, USA*, Fitzsimons General Hospital, Denver, Colo.; and *Dr. John M. Salyer*, Santa Ana, Calif.

THE MILITARY SIGNIFICANCE OF PARTIAL GASTRECTOMY—REPORT OF 500 CASES—*Captain Philip D. Cronemiller, MC, USN*, U.S. Naval Hospital, San Diego, Calif.

ACTIVITIES OF THE OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (HEALTH AND MEDICAL) DURING THE PAST YEAR—*Dr. Frank B. Berry*, Assistant Secretary of Defense (Health and Medical), Washington, D.C.

Army Aeromedical Symposium

An Army-wide Aeromedical symposium, sponsored by the U.S. Army Board for Aviation Accident Research, will be held at the San Carlos Hotel, Pensacola, Fla., 7–9 June. More than 100 Army medical officers will attend the symposium, designed to orient staff surgeons and hospital commanders on aeromedical factors in aircraft accidents. Vice Admiral Robert Goldthwaite, USN, chief, Naval Air Training, Pensacola Naval Air Station, will give the welcoming address.

Prominent speakers in the field of aviation medicine will deliver papers on a wide variety of aeromedical subjects. Among these are: Dr. Neal S. Warren, University of Southern California, "Psychological Problems in Modern Aviation"; Dr. Charles I. Barron, Lockheed Aircraft Corporation, "Medical Aspects of Aircraft Accidents Investigation"; Colonel John P. Stapp, USAF, MC, Aerospace Medical Laboratory, Wright Air Development Center, Ohio, "Human Tolerance of G Forces in Aircraft Accidents".

Captain Edward M. Wurzel, MC, USN, chief, Aeromedical Division, Naval Aviation Safety Division, Norfolk, Va., "Naval Flight Surgeon Program; "Contribution of Naval Flight Surgeons to Accident Prevention"; Lieutenant Colonel Richard B. Austin III, MC, USA, chief, Aviation Branch, Office of the Surgeon General, Department of the Army, "The Assignment and Utilization of Army Medical Aviation Officers"; and Colonel Frank Townsend, USAF, MC, director, Armed Forces Institute of Pathology, Washington, D.C., "Importance of Pathology and Autopsy on Aviation Accidents."

Youmans Gets Groedel Medal

Dr. John B. Youmans, technical director of research, office of the Army surgeon general, has been awarded the Groedel medal, the highest award of the American College of Cardiology.

At the presentation of the medal on 27 May, during the meeting of the college at Indianapolis, Dr. Youmans spoke on "The Humanities in Medicine." The medal was originally struck in honor of Dr. Franz M. Groedel, founder and first president of the College of Cardiology.

As technical director of research in the Army Medical Research and Development Command, Dr. Youmans provides technical guidance in the making and execution of a balanced program in medical, dental, veterinary, and allied sciences to meet the present and future needs of the Army. Dr. Youmans is a consultant to the Army surgeon general's preventive medicine division and a member of the Interdepartmental Committee on Nutrition for National Defense.

A retired Army Medical Corps colonel, Dr. Youmans served in China and in the Pacific and European theaters during World War II, and was awarded the Legion of Merit and the French Legion of Honor. He was dean and professor of medicine at Vanderbilt University School of Medicine prior to his appointment to the Army research and development program.

Health Physics Meeting Set

The annual Health Physics Society meeting and exhibition will be held 29 June–1 July at the Statler Hilton Hotel, Boston, Mass. As the main speaker, Arthur S. Flemming, Secretary of Health, Education, and Welfare, will discuss responsibilities and activities of the Federal Radiation Council.

Symposia will be presented on disposal of radioactive waste materials, including tank, ground, deep underground formation and ocean disposal methods, and on the effects of the National Committee on Radiation Protection's recommendations on national life. Additional papers on atmospheric pollution and air cleansing problems, environmental hazards, internal radiation hazards, and dosimetry will be given.

Former AMSC Chief Retires

Lieutenant Colonel Harriet S. Lee, chief of the Army Medical Specialist Corps from 1954 to 1958, retired recently after more than 20 years of military service. One of 3 women in the Army to hold the rank of full colonel at the time of her appointment as chief of the Medical Specialist Corps, Colonel Lee was retired in that grade. For the past 2 years, Colonel Lee has been assigned to the Historical Unit, Army Medical Service, where she has been coordinating plans for publication of the history of the Medical Specialist Corps.

Deaths

CRAWFORD, CAROLYN ANN, Second Lieutenant, AFRes, NC, of Columbia, South Carolina; assigned to 3550th USAF Hospital, Moody Air Force Base, Georgia; graduated in 1958 from the South Carolina Baptist Hospital School of Nursing, Columbia, South Carolina; appointed a second lieutenant, in the Air Force Reserve, 15 October 1959; reported for active duty 22 November 1959; died 28 March 1960, aged 24, near DuPont, Georgia, of injuries incurred in an automobile accident.

MCKEE, DOLORES LUCILLE, First Lieutenant, AFRes, NC, of Meadville, Pennsylvania; assigned to 3790th USAF Dispensary, Brooks Air Force Base, Texas; en route to the 5040th USAF Hospital, APO 942, Seattle, Washington; graduated in 1956 from Meadville Hospital School of Nursing, Meadville; appointed a second lieutenant in the Air Force Reserve and reported for active duty 13 October 1957; died 17 January 1960, aged 24, at Phillipsburg, Kansas, in an automobile accident.

MUGRAGE, RALPH MCCLELLAN, Captain, MC, USN, of Columbus, Ohio; assigned to U.S. Naval Station, San Juan, Puerto Rico; graduated in 1931 from the University of Cincinnati College of Medicine; commissioned a lieutenant commander in the U.S. Navy 26 August 1944; reported for active duty 7 September 1944; died 13 March 1960, aged 55, at San Juan, Puerto Rico, of coronary thrombosis.

MURPHY, JOAN PATRICIA, Lieutenant (jg), NC, USNR, of Woodside, New York; graduated in 1953 from the Misericordia School of Nursing, New York, N.Y.; appointed lieutenant (jg) in the U.S. Naval Reserve 19 May 1959; reported for active duty 2 July 1959; died 3 March 1960, aged 29, at Milton, Florida, in an automobile accident.

Officers Certified By Specialty Boards

The surgeons general of the military medical services have announced that the following Medical Corps officers have been certified by the specialty boards indicated.

American Board of Neurological Surgery

Brannon, Leland C., Comdr. USN

American Board of Orthopedic Surgery

Benavides, Jaime M., Jr., Comdr, USN
Caskie, James D., Lt. Col., USA
Deffer, Philip A., Lt. Col., USA
Modrak, Henry H., Lt. Col., USA

American Board of Pathology

Clinical Pathology

Chamblin, Stuart A. J., Capt., USA
Child, Proctor L., Maj., USA
Palmer, Paul W., Maj., USA
West, Glenn A., Capt., USA

Forensic Pathology

Johnston, Edward H., Maj., USA
Richey, Theodore W., Maj., USAF

Pathologic Anatomy

Chamblin, Stuart A. J., Capt., USA
Crafft, William M., Capt., USN
Edwards, Robert H., Capt., USAF
Lovell, Frederick W., Maj., USAF

American Board of Proctology

Sebrechts, Paul H., Comdr., USN

American Board of Surgery

Thoracic Surgery

Raymond, Bruce A., Maj., USA

Progress Notes

Colonel **Gustave J. Dammin,** MC, USAR, professor of pathology, Harvard Medical School, has been elected president of the tri-service Armed Forces Epidemiological Board. Colonel Dammin is consultant in pathology to the surgeon general, Department of the Army; consultant to the surgeon general, Public Health Service; and laboratory consultant to the Office of Civil and Defense Mobilization. . . . The U.S. Air Force Outstanding Unit Award was recently presented to the 814th Medical Group (SAC), Westover Air Force Base, Mass., for superior medical services.

Captain **Malcolm W. Arnold,** MC, USN, Bureau of Medicine and Surgery, Washington, D.C., will assume command of the Naval Medical School, National Naval Medical Center, Bethesda, Md. . . . Commander **William C. Trier,** MC, USN, U.S. Naval Hospital, St. Albans, N.Y., and Commander **James M. Poynter,** MC, USN, U.S. Naval Hospital, Bremerton, Wash., have been elected fellows of the American College of Surgeons . . . Captain **Herbert H. Eighmy,** MC, USN, former executive officer of the U.S. Naval Hospital, San Diego, Calif., has been assigned commander of the U.S. Naval Hospital, Naval Aviation Medical Center, Pensacola, Fla.

Fern W. Gleiser, professor of institutional management, University of Chicago, School of Business, and former president of the American Dietetic Association, has been appointed consultant in dietetics to the Army surgeon general. Miss Gleiser served as director of the U.S. Navy Cooks and Bakers School during World War II, and as consultant to the Task Force on Subsistence Services, Commission on Organization of the Executive Branch of the Government.

Three Fitzsimons General Hospital officers were promoted to their present rank during recent promotion ceremonies. They are: Lieutenant Colonel **Luella R. Willis,** ANC, night nursing supervisor; Major **Wyatt C. Smarr,** MSC, USA, chief, medical maintenance; and Major **Marie K. Happe,** ANC, who is presently en route to a new assignment at Camp Erwin, Calif . . . . Captain **Harry P. Mahin,** MC, USN, U.S. Naval Hospital, Philadelphia, Pa., has been elected to fellowship in the American College of Surgeons.

Subaquatic Medical Congress

The first international conference on subaquatic medicine, sponsored by the Club Alpin Sous-Marin of Cannes, will hold its meetings at the Palais des Festivals in Cannes, 15–19 June. Subjects to be discussed include free-diving accidents, their causes and prevention; decompression accidents, causes and prevention; depth intoxication; and problems due to diving with oxygen and gaseous mixtures. For information write to the Comité d'Organisation du Colloque, Club Alpin Sous-Marin, 10, Place Commandant Lamy, Cannes (A.M.) France.

Official Decorations

The following awards were recently announced by the Department of the Army.

Legion of Merit

Meder, Leland G., Col., MC, USA
Patient, Edith M., Lt. Col., ANC

Army Commendation Ribbon with Metal Pendant

Barrett, Carrie, Lt. Col., ANC

The Medical Officer Writes

Articles Published in Other Journals

U.S. Army

NEUTRALIZATION OF THE ACUTE EFFECTS OF HYPERCAPNIC ACIDOSIS BY T. H. A. M. Gabriel G. Nahas, M.D., and Captain Edwin C. Jordan, MC, USA, Walter Reed Army Institute of Research, Washington, D.C. *Aerospace Medicine*, January 1960.

THE LIVER AND PHYSICAL EXAMINATION. Lieutenant Colonel Eddy D. Palmer, MC, USA, 2d General Hospital, APO 180, New York, N.Y. *GP*, January 1960.

DIAGNOSIS AND TREATMENT OF TUMORS OF THE TESTIS. Colonel John F. Patton, MC, USA, Lieutenant Colonel Clarence B. Hewitt, MC, USA, and Nicholas Mallis, M.D., Walter Reed General Hospital, Washington, D.C. *Journal of the American Medical Association*, 19 December 1959.

STUDIES ON GROWTH HORMONE: V. EFFECT ON THE MINERAL AND NITROGEN BALANCES OF BURNED PATIENTS. Captain Elinor Pearson, AMSC, Captain Harry S. Soroff, MC, USA, Captain John F. Prudden, MC, USA, and First Lieutenant Melvin S. Schwartz, MC, USA, Brooke Army Medical Center, Fort Sam Houston, Texas. *American Journal of the Medical Sciences*, January 1960.

PYOGENIC INFECTIONS IN ORTHOPEDIC SURGERY, PREVENTION AND MANAGEMENT. Colonel Edwin J. Pulaski, MC, USA, and Colonel Lloyd W. Taylor, MC, USA, Letterman General Hospital, San Francisco, Calif. *California Medicine*, January 1960.

POSTERIOR COLPOTOMY: AN AVENUE FOR DEFINITIVE PELVIC OPERATIONS. Colonel James H. Smith, MC, USA, and Captain John A. Morris, MC, USA, Fitzsimons General Hospital, Denver, Colo. *American Journal of Obstetrics and Gynecology*, January 1960.

CULDOSCOPY FOR INFERTILITY, AN ANALYSIS OF 203 CASES. Colonel Humbert L. Riva, MC, USA, Captain Robert P. Hatch, MC, USA, and Captain James L. Breen, MC, USA, Walter Reed General Hospital, Washington, D.C. *American Journal of Obstetrics and Gynecology*, December 1959.

IMMUNOGENIC ENDOPHTHALMITIS PRODUCED IN THE GUINEA PIG BY DIFFERENT PATHOGENETIC MECHANISMS. Arthur M. Silverstein, Ph.D., and Lorenz E. Zimmerman, M.D., Armed Forces Institute of Pathology, Washington, D.C. *American Journal of Ophthalmology*, November 1959.

ULTRASTRUCTURE OF THE IRIS: AN ELECTRON MICROSCOPIC STUDY. Anastasios J. Tousimis Ph.D., and Benjamin S. Fine, M.D., Armed Forces Institute of Pathology, Washington, D.C. *American Journal of Ophthalmology*, November 1959.

ULTRASTRUCTURE OF THE IRIS: THE INTERCELLULAR STROMAL COMPONENTS. Anastasios J. Tousimis, Ph.D., and Benjamin S. Fine, M.D., Armed Forces Institute of Pathology, Washington, D.C. *A.M.A. Archives of Ophthalmology*, December 1959.

Titles of articles in current periodicals written by commissioned officers and civilian scientists in the medical services of the Department of Defense will be published insofar as space permits. This listing is gleaned from available periodicals and is not necessarily complete. Authors desiring inclusion of published articles are invited to send a reprint to the *Journal*.—EDITOR.

THE EFFECT OF RESERPINE ON THE CONDITIONED EMOTIONAL RESPONSE IN THE GUINEA PIG. Elliot S. Valenstein, Ph. D., Walter Reed Army Institute of Research, Washington, D.C. *Journal of the Experimental Analysis of Behavior*, July 1959.

CONGENITAL ANOMALIES OF THE LUNG. Colonel James A. Wier, MC, USA, Fitzsimons General Hospital, Denver, Colo. *Annals of Internal Medicine*, February 1960.

U.S. Navy

PROLONGED EXPOSURE IN THE NAVY FULL PRESSURE SUIT AT "SPACE EQUIVALENT" ALTITUDES. Commander Arthur L. Hall, MSC, USN, and Commander Richard J. Martin, MC, USN, U.S. Naval Air Station, Norfolk, Va. *Aerospace Medicine*, February 1960.

EFFECT OF CONTINUOUS HUMAN EXPOSURE TO OXYGEN TENSION OF 418 MM HG FOR 168 HOURS. Edward L. Michel, M.S., Lieutenant Robert W. Langevin, MC, USNR, and Captain Charles F. Gell, MC, USN, U.S. Naval Air Development Center, Philadelphia, Pa. *Aerospace Medicine*, February 1960.

THE EFFECT OF HYPOXIA ON THE RATE AT WHICH THE CARDIAC EJECTION FORCE IS GENERATED: A BALLISTOCARDIOGRAPHIC STUDY. Lieutenant Arthur J. Moss, MC, USNR, U.S. Naval School of Aviation Medicine, Pensacola, Fla. *American Heart Journal*, March 1960.

1-NOREPINEPHRINE, A PATHOLOGIST'S APPROACH TO RECENT INVESTIGATIONS. Lieutenant Commander Jeno E. Szakacs, MC, USN, and Lieutenant Clark D. Fobes, MC, USN, U.S. Naval Medical School, Bethesda, Md. *Maryland State Medical Journal*, February 1960.

SARCOIDOSIS; EXPERIENCE AT A NAVAL HOSPITAL. Lieutenant C. Charles Welch, MC, USN, and Captain Robert O. Canada, MC, USN, U.S. Naval Hospital, Oakland, Calif. *American Review of Respiratory Diseases*, February 1960.

STORED SKIN HOMOGRAFTS IN EXTENSIVELY BURNED PATIENTS. Lieutenant James M. Young, MC, USN, and Captain George W. Hyatt, MC, USN, Naval Medical School, National Naval Medical Center, Bethesda, Md. *A.M.A. Archives of Surgery*, February 1960.

U.S. Air Force

MULTIPLICATION AND CYTOPATHOGENICITY OF HERPES SIMPLEX VIRUS IN CULTURES OF FELINE RENAL CELLS. Major Robert A. Crandell, USAF, VC, Armed Forces Institute of Pathology, Washington, D.C. *Proceedings of the Society for Experimental Biology & Medicine*, November 1959.

AN EVALUATION OF SEVERAL MEDIA FOR THE EARLY DETECTION OF PSEUDOMONAS AERUGINOSA ENCOUNTERED IN CLINICAL PRACTICE. Captain Irving Davis, USAF, MSC, Walter Sellers, M.A., Hyman Orbach, M.S., and George Weddington, B.S., School of Aviation Medicine, Randolph Air Force Base, Texas. *Journal of Laboratory and Clinical Medicine*, January 1960.

ENCEPHALOPATHY OF CAT-SCRATCH DISEASE. Captain Robert E. Smith, USAF, MC, and Captain Richard M. Darling, USAF, MC, USAF Hospital, Lackland Air Force Base, Texas. *A.M.A. Journal of Diseases of Children*, January 1960.

CARCINOMA OF URETER. Lieutenant Colonel Charles L. Willmarth, USAF, MC, USAF Hospital, Lackland Air Force Base, Texas. *American Surgeon*, July 1959.

Correspondence

Ohio State University
Columbus, Ohio

Dear Sir:

May I congratulate you and your staff for the excellent "Tenth Anniversary Number" of the *Armed Forces Medical Journal*, which was published January, 1960.

For the historical record, may I correct a statement in General Hayes' article on page 48, Vol. 11, No. 1, which reads, "Another member of the society, Dr. Melvin A. Casberg, was *the first to serve as Assistant to the Secretary of Defense (Health and Medical)*, as the position was originally designated."

Dr. Casberg was first to serve as "Assistant Secretary of Defense (Health and Medical)".

The undersigned, however, was first to serve as "Assistant to the Secretary of Defense (Health and Medical)", having been appointed to this position by the then Secretary of Defense, Louis Johnson, on October 1, 1949, and to the position of "Director of Medical Services" of the Department of Defense. Prior to this, the undersigned had served as "Consultant to the Secretary of Defense" and "Deputy of the Medical Services Division, Office of the Secretary of Defense" from July 6, 1949 to September 30, 1949. On January 2, 1951, the then Secretary of Defense, George Marshall, appointed the undersigned to the position of "Assistant to the Secretary of Defense (Health and Medical)" and "Chairman of the Armed Forces Medical Policy Council." The undersigned resigned these two positions on June 30, 1951, and was succeeded by Dr. W. Randolph Lovelace II, who in turn on April 1, 1952, was succeeded by Dr. Melvin A. Casberg.

Inasmuch as I am and have been since 1949 a "dues" paying member of the "Society of Medical Consultants," the first sentence on this same page 48 should be corrected to read, "during 1951, the civilian medical members of the Armed Forces Medical Policy Council were members of the society. These were the two chairmen . . . etc. (Meiling, Lovelace, Ravdin, Shands)."

Having served as the senior medical advisor in the Department of Defense during 1949–51, it is with justifiable admiration that I have watched the growth and professional achievements of the medical services of the Army, Navy, and Air Force over the past ten years. As the originator of the "Monthly Message" of the *U.S. Armed Forces Medical Journal*, I have maintained a continuing interest in the editorial policies and the stimulating professional reports and original articles of the medical research, education, clinical studies, and military medicine, as they have appeared in the *U.S. Armed Forces Medical Journal* these past ten years.

The officers and enlisted personnel of the medical services may be justly proud of their official publication, and may the next ten years bring continued success to the *U.S. Armed Forces Medical Journal*.

Richard L. Meiling, M.D.
Associate Dean, College of Medicine
Associate Director, The Health Center

This Is Your A. M. A.

THE DEPARTMENT OF ECONOMIC RESEARCH of the American Medical Association has been under new leadership since 1 January 1959. It was formerly called the Bureau of Medical Economic Research, a title that it carried from 1946 through 1958. Even earlier it was known as the Bureau of Medical Economics, a title under which it was founded in 1931.

Essentially an internal service and an advisory and consulting agency, the Department of Economic Research deals primarily in matters having economic implications and, additionally, in matters of a statistical nature. In this capacity, the Department during the past year served all divisions of Association headquarters, particularly the Communications, Field, and Law Divisions, as well as the Board of Trustees and the several departments of the division to which it belonged. It worked most closely with the Council on Medical Service in regard to health insurance programs under collective bargaining. Public attention to medical care costs accounts in part for the existence of this Department as well as its close working relationship with the Communications Division.

One of the Department's principal continuing functions with respect to medical care costs involves reporting and interpreting the Bureau of Labor Statistics Consumer Price Index data on medical care. The behavior of this portion of the index in comparison with other portions often has to be interpreted in view of both the persistent inflation over the past 25 years and the steady real growth in the consumption of medical care. The Department publishes a report almost every year on this subject and provides additional explanation and interpretation in talks to general and medical groups throughout the nation. Through such efforts the Department seeks to keep physicians and their representatives current and articulate on the data and the issues in this area.

Closely paralleling its work on medical care prices, the Department provides frequent reports on expenditures for private consumption of medical care. These data are published by the U. S. Department of Commerce and reflect the quantity and changes in quantity of consumption more than the changes in prices, which are essentially what the Consumer Price Index provides.

Fundamentally, the Department of Economic Research is concerned with the long-run economic implications of developments affecting medicine. General economic conditions, such as inflation, real economic growth, rising family incomes, and increasing consumer preference for medical care all contribute to the demand for medical care and to the determination of prices of medical care services. Similarly, the Department is concerned about many ramifications of health insurance such as the manner and extent of coverage, the types of benefits provided, the question of fee schedules, the use of co-insurance and deductibles, the element of fringe benefits, and the impact of all of these upon utilization and also upon costs. The factors affecting the supply of physicians and physicians' services, their distribution, and pitfalls in measuring these quantities are often examined. Changes in the business organization, the location at which medical care is provided, the use of capital equipment, the pattern of morbidity, and other factors related to physician productivity are studied. Efforts are made to measure not only the quantity, but also the quality of medical care. The intervention of government directly through health programs or indirectly through taxation is also watched closely. The desirability of individual and voluntary retire-

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From the Council on National Security of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense.—EDITOR

ment programs as opposed to collective and compulsory retirement programs has been set forth. During the last year or two considerable attention has been given to the medical care costs of the aged and their financial resources, assets as well as incomes, potentially usable to meet these costs.

Within the past few months, an Economic Research Advisory Committee has been appointed to assist the Department in planning and implementing its research by having a substantial portion performed by outside scholars. The Committee now has 8 members, all of them outstanding academicians and students of economics, political science, and sociology in the United States. Through this Committee, it is expected that research performed by independent scholars can both be broader and possibly cover more controversial subjects than if performed by the regular staff.

The Department additionally contributes articles, editorials, and book reviews to A.M.A. publications, evaluates other publications, presents talks to various groups, conducts surveys, and answers many telephone and letter inquiries from member physicians and others seeking assistance. Among its recent publications are the following:

Bulletin 106—Personal Consumption Expenditures, 1947–1957: New Series Versus Old Series.

Bulletin 108—Some Observations on Financial Assets of the Aged and Forand-Type Legislation.

M–116—Medical Care Prices: Long Run Versus Short Run.

M–120—Critique of Some Statistics on Health Insurance Among the Aged.

M–122—The Constitution of Liberty—a review article.

M–123—Freedom of Choice—an editorial.

These publications are available at no cost upon request to the Department of Economic Research, American Medical Association, 535 N. Dearborn Street, Chicago 10, Illinois.

Recent Developments in Virology Reviewed

A concise review of recent developments in virology, of interest to military physicians, appears in the February 1960 issue of *Health News*, published by the New York State Department of Health. Entitled "Virology Advances," and written by Dr. John E. Hotchin, Assistant Director, Laboratories for Virology, Division of Laboratories and Research, New York State Department of Health, the article summarizes present knowledge concerning the newer viruses, including the Coxsackie group, the cytopathogenic or ECHO group, myxoviruses, and some miscellaneous forms. Their role in presently known diseases is defined. The brief text is illustrated with some helpful photomicrographs, and the accompanying tables and bibliography are excellent points of reference. Part II of this article, devoted to current research developments of the Division of Laboratories and Research, appears in the March issue of *Health News*.

Book Reviews

INTERPERSONAL RELATIONSHIPS IN THE HOSPITAL, by *Warner F. Bowers*, A.B., B. Sc., M.D., M. Sc., Ph. D. (Surg.). 125 pages. Charles C Thomas, Publisher, Springfield, Ill., 1960. Price $5.

This small book divided into 20 brief chapters can be read comfortably in a single sitting. The subject matter consists of a thoughtful journal that incorporates the reflections and philosophies of a senior military surgeon acquired over many years of rich hospital experience. The style is rather relaxed, interesting, and amply sprinkled with notable quotations from literary figures. Every reader may not vibrate sympathetically with some of the author's attitudes and expressions. For example, the term "young doctors" is employed with remarkable frequency and gives one the impression it is being used as a single word in a manner reminiscent of another term used by some southern gentlemen to describe their northern brethren. It would appear that these "young doctors" have almost exclusive province in the area of medical misdemeanor, while "older doctors" escape this onus and the author's reprimand. Also one might not like the ring of the phrase, "Gadgeteering subspecialties like physical medicine are a paradise for the self treating patient"; or one might have difficulty with the somewhat cumbersome statement, "The hypersensitive person fears criticism and, therefore, fears to take action for fear he may be rejected or fail and thus get criticism." However, the book amply expresses most of the problems, grievances, and aspirations that have been felt by anyone who has "grown up" in a teaching hospital environment. Delicate areas of interpersonal relationship such as dealing with relatives of patients, medicolegal pitfalls, proper conduct on teaching rounds, and relationships between professional and administrative personnel are handled with admirable candor. This frank approach is refreshing in this era when it has become fashionable to present such discussions in an ambiguous sociopsychologic mumbojumbo where the facts emerge only after much machete work on the semantic overgrowth. Such is not the case with this forthright discussion. In general, an unmistakable message is derived from these pages, but the image is often somewhat diffuse rather than the sharp incisive impression one would anticipate from the pen of this eminent teacher-surgeon. The book should be enjoyable to anyone who is interested in the studied observations of a veteran in hospital interpersonal relationships. ROBERT H. MOSER, MAJ. MC, USA

ESSENTIALS OF ORTHOPAEDICS, by *Philip Wiles*, M.S. (Lond.), F.R.C.S. (Eng.), F.A.C.S. 3d edition. 576 pages; illustrated. Little, Brown and Co., Boston, Mass., 1959. Price $13.

This new edition of an excellent orthopedic textbook by an eminent British author has been thoroughly revised, particularly the sections on postural defects of the feet, low-back pain, the anatomy and pathology of the intervertebral disks, spondylolisthesis, scoliosis, the surgery of osteoarthritis of the hip, gout, pain in the shoulder, arm, and hand, diseases and disorders of the tendon sheaths, osteoclastoma, and the treatment of congenital dislocation of the hip, Perthes' disease, rheumatoid arthritis, and tuberculous arthritis. The volume is well named. The author presents essentials more than superficially. He does not discuss fractures in other than a referential manner. Surgical technic is scantily described, if at all.

Orthopedic pathology and congenital deformities are presented in essence rather than in detail. Tuberculosis of bone, on the contrary, is overemphasized relative to its importance today in this country. In spite of these criticisms this is a fine book. The writing is clear, the pages and type blend well together, and the line drawings and photographic and x-ray reproductions stand out in emphasis. Regional topics are thoroughly discussed. The uniformity between British and U.S. concepts increases each year, with minor variations in nomenclature persisting, such as osteoclastoma for giant cell tumor of bone or Haglund's disease for Sever's disease. Because of this uniformity, the text can be strongly recommended to all students, whether in medical school, residency, or practice. It is a sound work with positive answers. COMDR. ROBERT H. BROWN, MC, USN

THE MEGALOBLASTIC ANEMIAS, by *Victor Herbert*, M.D. 162 pages; illustrated. Grune & Stratton, Inc., New York, N.Y., 1959. Price $6.

The discovery by George Minot that liver is good for people with pernicious anemia was the opening of the modern era of hematology. Experiments replaced the microscope as the most important tool of hematologic research. The excitement and the method carried into all areas of hematology: coagulation, hemolytic disease, immunohematology and the rest. But pernicious anemia—together with the other megaloblastic diseases—has remained one of the most active and fertile fields of research. Liver extract was developed, the intrinsic factor was postulated, folic acid and vitamin B_{12} were isolated, the absorptive fault was localized, and the biochemical pathways of purine metabolism are beginning to be opened. This is a small book, but everything is here: the history, the clinical problem, the research work, even the enthusiasm. Dr. Herbert has a thorough grasp of the subject. He has had a considerable clinical experience and he has probably read everything that was ever written on the disease. He has organized it all into a concise, well-organized, and well-written statement.

COL. WILLIAM H. CROSBY, MC, USA

THE YEAR BOOK OF MEDICINE (1959–1960 Year Book Series), edited by *Paul B. Beeson*, M.D., *Carl Muschenheim*, M.D., *William B. Castle*, M.D., *Tinsley R. Harrison*, M.D., *Franz J. Ingelfinger*, M.D., and *Philip K. Bondy*, M.D. 733 pages. Year Book Publishers Inc., Chicago, Ill., 1959. Price $8.

The current volume maintains the high standards of excellence established by its predecessors. There is very little change in the general format of the work. The editorial staff, the general arrangement, and the length of the publication conform to the highly successful pattern established in previous years. Important contributions from current literature have been carefully evaluated, abstracted, arranged, and presented. Each section reflects the broad experience and mature judgment of the respective editors. The 6 major subdivisions of the book comprise infections, the chest, the blood and blood-forming organs, the cardiovascular system and kidney, the digestive system, and metabolism. Each consists of 85 to 100 crisp, concise, meaty abstracts. The witty and often pungent annotations of the editors add much to the value of the work. The index is comprehensive; the figures, graphs, and illustrations are carefully chosen. It would be difficult to select any one section as superior to the others; all are excellent. While the perusal of abstracts such as these can never supplant the careful reading of standard medical journals, such abstracts do furnish the busy practioner with a carefully selected bibliography (selected by experts) of the important contributions to those subspecialties which may be outside his current practice. The internist, as well as the general practitioner, will find this book a valuable addition to his personal library. COL. EMMETT L. KEHOE, MC, USA

THE SURGEON AND THE CHILD, by *Willis J. Potts*, M.D. 255 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1959. Price $7.50.

This short monograph discusses briefly only the more common surgical conditions encountered in children and is a compilation of the author's opinions on the subject. As the author states repeatedly, the subject matter is presented in a somewhat "dictatorial" manner and, in a sense, this is true. The reader can "either take it or leave it." There are no references. The book is well indexed. Illustrations, although somewhat scanty, are beautifully drawn. For the most part, the treatment outlined is in accord with prevailing surgical concepts, but in one field the author is at variance with current thinking. Some readers will disagree that shunting procedures for bleeding esophageal varices should be done in children 3 years of age or over. Many reports in the current literature emphasize that the patient should be at least 8 years of age because of the high incidence of thrombosis of the shunt in the younger age groups. Splenectomy alone in the presence of thrombosis of the splenic vein is offered as a surgical procedure for portal hypertension. No mention is made of transthoracic ligation of bleeding esophageal varices as a stopgap measure to control future hemorrhages until the patient is old enough for a shunting procedure—a procedure with which this reviewer has had considerable success in a limited number of cases. This book will serve as a ready reference for the common surgical problems encountered in a busy general surgical practice, although its value would appear limited because of the availability of more detailed and comprehensive works covering the subject.

COL. SANFORD W. FRENCH, III, MC, USA

DISTURBANCES IN GASTROINTESTINAL MOTILITY, Diarrhea, Constipation and Biliary Dysfunction, edited by *J. Alfred Rider*, M.D., Ph. D., and *Hugo C. Moeller*, M.D., Ph. D. 387 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $13.

This small volume is essentially a transcript of a conference entitled "Pathophysiology and Treatment of Disburbances in Gastrointestinal Motility," held at the University of California School of Medicine (San Francisco) in 1958, which this reviewer was privileged to attend. It consists of some 15 lectures and 2 symposiums presented by outstanding authorities from a number of medical institutions in the United States and England. The general format of the work is much like that of *Medical Clinics of North America*. The illustrations, graphs, photographs, and tables are excellent, but the editing gives evidence of having been done in haste. There are errors in spelling and in one instance, at least, the omission of the word "not" completely alters the author's intent. Most of the chapters are followed by adequate bibliographies. The first 120 pages are devoted to a general discussion of pertinent physiology, pharmacology, and psychodynamics of the gastrointestinal tract. The 2 chapters on alimentary tract motility as determined by pressure transducers, balloons, and radio telemetering capsules encompass most of the recent important work in this field and are outstanding. Berk's excellent discussion of gallbladder and biliary tract disorders, Dragstedt's fine chapter on the pathogenesis and treatment of acute dilatation of the stomach and paralytic ileus, and McHardy's comprehensive treatment of the postcholecystectomy syndrome are particularly informative. The English surgeon, Rose, presents some fascinating new investigative procedures to aid in the diagnosis and treatment of biliary dyskinesias. The old question of whether or not to remove the asymptomatic calcareous gallbladder again rears its head, with Berk and McHardy favoring immediate surgery, and Overstreet championing watchful

waiting for patients with this condition. Steigman's splendid discussion of the nature and therapy of chronic constipation is one of the finest presentations of this troublesome problem currently in print. One might disagree with some of Alvarez's opinions on the pathophysiology and therapy of certain functional gastrointenstinal complaints, but it cannot be denied that this distinguished physician offers much sound, practical advice in a field that has interested him for so many years. The chapters on malabsorption by Ruffin, regional enteritis by Moeller, and postgastrectomy syndromes by Rider present in a crisp, concise manner most of the present-day thinking on these conditions. This work should prove to be a valuable addition to the library of all internists and general practitioners who deal with perplexing gastrointestinal motility problems.

COL. EMMETT L. KEHOE, MC, USA

BIOPSY MANUAL, by *James D. Hardy*, M.D., *James C. Griffin, Jr.*, M.D., and *Jorge A. Rodriguez*, M.D. 150 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1959. Price $6.50.

Starting with the premise that biopsy constitutes a basic step in diagnosis and treatment of many diseases, the authors consider in elementary fashion the uses, types, complications, common errors and omissions, points in local and topical anesthesia, methods of specimen preservation, information needed by the pathologist, instruments needed for special locations, and technics for biopsy of various organs. Some of the material seems needlessly simple, such as the full-page picture of a bottle of formalin and 3 empty specimen bottles. The authors deviate from their subject at times, as, for example, in the discussion of definitive management of thyroid carinoma. Endoscopic procedures are discussed, with the exception of peritoneoscopy and culdoscopy, which should be included for completeness. Colpotomy is an approach used by some gynecologists and not mentioned in the book. There may be some misunderstanding of the rectal biopsy in suspected megacolon, where it is mentioned that biopsy should not include the serosa. Since the preliminary diagnostic biopsy usually is below the peritoneal reflection, there is no serosa; at definitive operation serial biopsies and frozen section examinations determine the level of resection, but here, full thickness biopsy is used. It is felt that the usefulness of this book is limited.

COL. WARNER F. BOWERS, MC, USA

GROWTH DIAGNOSIS, Selected Methods for Interpreting and Predicting Physical Development From One Year to Maturity, by *Leona M. Bayer* and *Nancy Bayley*. 240 pages; illustrated. The University of Chicago Press, Chicago, Ill., 1959. Price $10.

"It is the intent of this book to convert selected segments of developmental data into simple techniques for appraising growth." In formulating the present volume, the authors have drawn on their own experience in evaluating growth patterns and the relationship of growth predictions. It is their feeling that the average pediatrician utilizes only simple height and weight curves because up until now there has not been available in one place "usable blueprints" to enable him to make a more complete growth diagnosis or evaluation. The book is divided into 2 major parts. The first on methodology concerns the collection of data on the individual patient and the role that inspection, anthropometry, photography, and x-rays for skeletal age play in the collection of such data. The section also describes the analysis of data and the arrival at an evaluation of the current status of the patient and interpretation of successive observations and growth trends.

Part 2 provides case illustrations to show how certain methods of recording and studying data will be of more value in given clinical situations. Of the 22 case studies, 8 represent "normal" patterns. Generous use of illustrative photographs in this section provides graphic demonstration of the physical appearance of the examples cited. Appropriate tables are included from many sources to enable the clinician to evaluate the patient more easily. The appendixes provide tables of anthropometric values, means and standard deviation tables, height-prediction tables, and tables for converting age into decimal system. If it is remembered that the final result is a prediction and not a stated fact, the book will aid the pediatrician in helping patients to arrive satisfactorily at an estimation of their probable growth potential. A volume of this type is difficult to review in the usual manner because its worth to an individual can only be determined after careful perusal by the physician to see whether it will prove valuable in his practice situation. It is, however, a significant advance to have available in 1 volume all the tables and means of evaluating growth and growth potential. For this reason the book will probably enjoy success with pediatricians.

MAJ. FREDERICK C. BIEHUSEN, MC, USA

CLINICAL APPLICATIONS OF DIAGNOSTIC AND THERAPEUTIC NERVE BLOCKS, by *John J. Bonica*, M.D. Publication Number 342, American Lecture Series. 354 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $8.75.

The author is well known for his interest in the use of nerve blocks for the control of pain. He is the author of a large textbook entitled *The Management of Pain*, which was published in 1953. The aim of this book of 295 pages, as stated by the author, is "to present an evaluation of various nerve block procedures as diagnostic and therapeutic tools. The book is intended for use by any practitioner interested in this problem." The author admits that because of the small size of this volume, detailed descriptions of technics are prohibited. In the first hundred pages he discusses the theories of the pain processes; indications for nerve blocks in the control of pain; agents used in blocks; and complications expected from blocks. The last two hundred pages describe briefly specific blocks performed for specific clinical pain patterns. A great deal of space is devoted to the use of blocks for conditions which are not improved by blocks. Apparently, the author feels he must present the many frustrations as well as the successes. I think the material of this book would be difficult to understand without previous knowledge and experience with nerve block procedures. This book may serve to stimulate the interested practitioner to look up more detailed descriptions in other publications. The bibliography contains 150 references. The index is adequate.

CAPT. DANIEL M. PINO, MC, USN

PSYCHOPATHY, A Comparative Analysis of Clinical Pictures, by *Carl Frankenstein*, Ph. D. 198 pages. Grune & Stratton, Inc., New York, N.Y., 1959. Price $6.75.

"This book is a study in clinical semantics," the author warns in the first line of the preface to this esoteric study of that psychiatric no-man's land: psychopathy. The author has tried to present criteria by which the diagnosis of psychopathy may be justifiably made. In words most difficult to understand and follow, the reader is given those elements necessary before one can diagnose this condition (at the same time differentiating it from all other conditions). These are principally: the predominance in psychopaths of a life tendency to expand rather than remain static; egoinflation, with subsequent incorporation of everything that is non-ego; and a constitutional weakness (or absence) of anxiety. The author out-

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lines his argument well, explaining the role of early traumatic forces on a susceptible individual. Various types of psychopathy are defined after the general concept has been discussed. There then follows a discussion—by means of comparison and contrast—of other clinical concepts, such as the hysterical character, character disorders in general, the neurotic character, the pervert, the impulse neurotic, primary behavior disorder in children, adolescent problems, cerebral dysfunctions, and psychoses, both adult and childhood. This book is an attempt to clarify the concept of psychopathy. I don't feel it does this for the general practitioner of psychiatry, but it may provoke discussion amongst psychoanalysts and psychologists who devote much of their thinking to the ego; non-ego relationship in all its aspects. This work gives a good look at what is *not* psychopathy, but the author intended this. This book will never enjoy the popularity of *The Mask of Sanity* but, then, its subject matter is considerably more technical and at times too complicated. There are 9 chapters, a list of 114 references, and an index. As a library reference piece, this book is recommended to those students of the "psyche-path" who are analyzing various points of view.

LT. COMDR. CHARLES E. HERLIHY, MC, USN

BASIC PHYSICS IN RADIOLOGY, by *L. A. W. Kemp*, B. Sc., Ph. D., F. Inst. P., and *R. Oliver*, M. Sc., F. Inst. P., A.M.I.E.E. 329 pages. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $8.50.

These British authors have compiled a well-written and easily understandable basic physics text. Each of the 12 chapters is concerned with a specific subject, such as heat, dynamics, magnetism, electricity, radiant energy. There is a rather complete explanation and derivation of formulas, with numerous examples. At the completion of each topic several problems requiring a distinct understanding of the subject matter for their solution are helpful in the practical application of the material. The text is amply illustrated, simplifying the explanation of difficult subjects. Although the material is initially elementary, the text rapidly but logically and clearly evolves into the complex. The text is lacking in some information well covered in standard American texts, such as radiobiology and the physics of radiation therapy, radioisotopes, and nuclear physics. This is an excellent book for the radiology resident, who more often than not finds basic physics his most difficult subject.

LT. MATTHEW F. YENNEY, MC, USN

DISEASES OF THE NOSE, THROAT AND EAR, A Handbook for Students and Practitioners, by *I. Simson Hall*, M.B., Ch. B., F.R.C.P.E., F.R.C.S.E., with 8 colored plates. 7th edition. 467 pages; illustrated. Williams & Willkins Co., Baltimore, Md., 1959. Price $5.

The author believes that some knowledge of the nose, throat, and ear is essential for a medical practitioner. This volume is designed to meet this need of the busy practitioner and the student. Accordingly, it is limited in size. The material is presented in sections on the nose, nasal accessory sinuses, pharynx, larynx, endoscopy, and ear. Each section has a brief anatomic description. The entire field is covered adequately, with emphasis on the more common complaints and on minor technical procedures, although complicated operations are mentioned. Equipment described varies in some minor points from that commonly seen in this country. Cocaine is apparently more commonly used in Great Britain than in this country. But these are minor matters. The book gives an outstanding presentation of the field in an abbreviated form. It is well presented, easy to understand, and would be a valuable summary to any student or practitioner.

COL. HENRY S. MURPHEY, MC, USA

CLINICAL ORTHOPAEDICS, *Anthony F. DePalma*, Editor-in-Chief, with the assistance of the associate editors, the board of advisory editors and the board of corresponding editors, Number 14, Summer 1959. *Albert B. Ferguson*, guest editor. 193 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1959. Price $7.50.

The fourteenth issue of this journal has, like the previous numbers, achieved its purpose in presenting a variety of orthopedic subjects in a clear and concise fashion. Section I presents 12 brief articles on "recent advances" in orthopedic surgery in infancy and childhood. Section II is devoted to general orthopedics, and the final short section III is once again called "Items." These sections are preceded by a 4-page tribute to Dr. Michael Hoke. Much of the material presented in the section on recent advances in orthopedic surgery could scarcely be classified as recent. An excellent discussion by Frantz on the juvenile amputee is well worth reading. Albert B. Ferguson's opinions on the treatment of osteogenic sarcoma are interesting and, in reference to the effect of high altitudes on osteogenic sarcoma, downright startling. Other articles in this section are more or less routine but worth reviewing. The section on general orthopedics is fair, with Howorth's recommendations for the management of the painful coccyx being unusually well presented. The final section with the unlikely title "Items" has little to recommend it unless one is interested in discovering how a fracture in a child should not be managed—even though a consecutive series of 200 cases of open reduction of fractures in children without a bad result is indeed an impressive series. This journal is recommended for all students and practitioners of orthopedic surgery. CAPT. CLIFFORD A. STEVENSON, MC, USN

PSYCHOANALYSIS AND PSYCHOTHERAPY, Selected Papers of Frieda Fromm-Reichman, edited by *Dexter M. Bullard*, with a foreword by *Edith V. Weigert*. 349 pages. University of Chicago Press, Chicago, Ill., 1959. Price $7.50.

This volume of selected papers of Dr. Freida Fromm-Reichman represents a concentration of her thoughts and ideas, especially those concepts developed and clarified during the later post-Heidelberg phase of her clinical practice. Any estimate of the contribution of this gifted outstanding woman to contemporary psychiatry, especially her investigation into psychotherapy, must take into account the starting point of her thinking, namely, the "philosophy of the problem," as she puts it. These assumptions concern the notions that psychoses are treatable by modified dynamically oriented intensive psychotherapy, that an antecedent psychosis successfully treated is no barrier to a full and productive life after recovery, that psychosis is only an enlarged re-representation of what normal persons commonly experience during sleep and other states, and most important of all, that those attempting the psychotherapy of schizophrenia must have, or develop within themselves, a special sensitiveness to the present and past suffering of the mentally disturbed together with an enduring therapeutic optimism, personal honesty, and hope. These papers reflect Dr. Fromm-Reichman's refreshing positivism as regards the therapy of the psychoses. The methods she has employed, even though not always given in fine detail in the various papers, consist essentially of developing a unique nuclear sense of immediacy and community in the therapeutic situation, achieved by means of her well-developed femininity and a finely sharpened intuitive sense. She is among an increasing group of dynamically oriented therapists who realize the futility and emptiness of purely "technical" efforts; as a consequence she commits herself personally to the patient with her "philosophy"—its values and its value derivatives, personal warmth, tireless persistent willingness to understand attitudes,

and a feeling of hope. This volume deserves first rank in the library of those treating psychotic states as well as those in administrative or supervisory positions. Even though economic and other circumstances were favorable in the environment of Dr. Fromm-Reichman's casework, time may demonstrate her approach to be a true pioneering effort and an improvement upon the accepted analytic methods inasmuch as her philosophy and personal commitment have added a definite value system to classic theory with the noteworthy results to be expected of such a realistic combination. Dr. Fromm-Reichman's work reflects the old adage that "the best teacher is not one who tries to give of his knowledge, but of his lovingness." Her writings are a living representation of how one person did give of herself and has shown the way for others to travel. It is by no means an easy one.

LT. COL. PAUL J. SCHRADER, MC, USA

PATHOLOGY OF THE HEART, edited by *S. E. Gould*, M.D. D. Sc., with a foreword by *Howard T. Karsner*, M.D. 2d edition. 1138 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1960. Price $32.50.

The popularity of this important book is indicated by its reissue only 6 years after the first edition, although pathology is usually considered to be a specialty that changes only slowly. Type has been completely reset to allow for uninhibited revision by the original authors and to provide, largely by typographic economies, space for new chapters on the conduction system, aortic lesions, cardiopulmonary disease, surgery, and histochemistry. The names of the 20 collaborators are an immediate assurance that their respective contributions are authoritative and up to the minute. As used in the title, "pathology" retains its original broad meaning of "disease"; cognizance of the interrelationships of structure and function is taken not only in the diversity of approaches—by means of chapters on history, embryology, normal anatomy and histology, normal and abnormal physiology, clinicopathologic correlations, and surgery—but in the emphasis given to etiology, pathogenesis, and disordered metabolism in discussions of pathologic anatomy. From this uniformly excellent volume, it is difficult to select individual sections for special notice. Most illuminating for this reviewer, however, are the beautifully illustrated chapters on malformations by Jesse Edwards, which deservedly occupy almost one quarter of the available pages; the 3 comprehensive wide-ranging chapters on nonrheumatic inflammatory disease by Otto Saphir, leading naturally into the chapter on parasitic diseases by Walter Stryker; the chapter on the conduction system by Maurice Lev, with its painstaking detail and its review of comparative mammalian anatomy and physiology; the comprehensiveness in limited space of the chapters on clinicopathologic correlations by Gordon Myers and on surgery by Charles Bailey and Joseph Imbriglia; and the practical selectiveness of the brief chapter on histochemistry by J. F. A. McManus and Miguel Guerrero. As in any collaborative monograph, a certain amount of overlap is inevitable: Much of the material in the chapter on structure is repeated elsewhere (although curiously enough later in the book a reference to the morphology of the conduction system ignores the chapter on structure in favor of that devoted to this system); the pathogenesis of atherosclerosis is discussed under diseases of the coronary arteries and again under lesions of the aorta; endocardial sclerosis under both congenital malformations and nonrheumatic diseases. In a mature reference work of this nature, much is to be gained, in the way of space for the publisher and time for the user, by combining such discussions. Throughout the volume, controversial material is honestly presented, and personal opinions are acknowledged to be such; examples of masterful condensations of bulky pro and con evidence are to be found in the discussions of the pathogenesis of atheromatosis

by S. E. Gould, the significance of the Aschoff body by Archie Baggenstoss and Otto Saphir, the vascularization of normal valves by Saphir, and the pathogenesis of "primary" pulmonary hypertension by Averill Liebow. Glaring differences of opinion are for the most part conspicuously absent, although it is a little disconcerting to be informed by one author that tissue changes attributable to age have not been defined or delineated from those due to previous disease, and by another that "the most important change caused by aging" of the coronary arteries is progressive deterioration of elastic tissue; certainly one would prefer the statement that the change *accompanies* age. The reference value of this richly illustrated book is increased by details of its format; the table of section and subsection headings introducing each chapter; the chronologically arranged bibliography following each chapter; the index of subjects, with references to illustrations conveniently distinguished by boldface type; and the extensive index to authors cited in the text. The excellent design, graceful topography, and flawless editing contribute to the pleasure of owning and browsing through this book. As a reference work and guide to the literature, it should rank as a must for the pathologist, a desideratum for the practitioner of thoracic medicine.

MAY SHERMAN, M.D.

THE MOUTH, Its Clinical Appraisal, by *A. B. Riffle*, D.D.S. 118 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1959. Price $3.50.

This quite small monograph has as its stated objective a description of the medical side of a thorough mouth examination. Chapters 1 and 2 describe a procedure developed at Rochester General Hospital, Rochester, N.Y., for such an examination. These chapters are excellent for the practicing dentist as well as the practicing physician. A comprehensive yet practical procedure of mouth examination is outlined and thoroughly discussed. A discussion in chapter 6 ("Potentially Grave Criteria") of relatively rare lesions that might be seen in examination procedures completes the excellent outline in the first 2 chapters. Additional chapters discuss dental aspects of anesthesia, nutrition, orthodontics, systemic derangements, and oral health. It is regrettable that in a book primarily designed to foster understanding so many statements of a not generally accepted nature are made. Statements such as "There are other objections as well, all adding up to make the frequent use of local anesthetics for operative dentistry and periodontics a procedure of dubious merit" and "Despite loquacious claims to the contrary, there is no real evidence that the orthodontist's successful cases are any less susceptible to dental caries or periodontal disease than they would have been without" do not represent the consensus of dental opinion today. The statement "the distofacial cusp of the upper points into the vertical depression formed by the two facial lobes on the lower molar (fig. 15)," used to describe a guide to normal occlusion, requires either clarification or correction of a typographic error. The contact of the *mesio*facial cusp of the upper first molar in the groove between the mesiofacial and distofacial cusps of the lower first molar is the accepted guide or "key to normal occlusion." The photographs in figure 15 (pages 82–83) do not clarify this point, as neither of the above two situations is demonstrated, but rather a cusp to cusp relationship of the first molars is shown with a retruded mandible position. The book is written in a readable manner and the summary at each chapter's end is of advantage. With clarification or modification of some of the extreme views expressed, this book could be of value to the lay individual interested in dental procedure as well as to the practicing physician and dentist.

MAJ. SAM W. HOSKINS, JR., USAF, DC

AUTOGENOUS VEIN GRAFTS, and Related Aspects of Peripheral Arterial Disease, by *W. Andrew Dale*, M.D., with a preface by *Earle B. Mahoney*, M.D., 123 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $6.

The stated purpose of this monograph is to present experimental and clinical experience with the problem of small artery grafting. Although it is centered about the use of autogenous vein grafts, both homologous artery and synthetic grafts are covered. The volume begins with a chapter on the historical aspects of arterial surgery and continues with chapters on the experimental and clinical use of autogenous vein grafts in femoral arterial occlusion. Later chapters deal tersely but adequately with physiology, pathology, diagnosis, arteriography, graft materials, technic, pre- and postoperative course and care. Each chapter is followed by a good bibliography. The index is adequate. The illustrative material supplements the text very well. The author's opinion is that autogenous vein grafts are to be preferred for the reconstructive surgery of femoral occlusive disease, with synthetic prostheses second and homologous artery grafts last. He feels that the more difficult technic of vein grafting and the readier availability of synthetic tubes is more than balanced by the viability and long-term patency of the autogenous vein. The author presents a good case for his viewpoint but concedes that more and longer series will be necessary for complete evaluation. In such a rapidly advancing field, this is a constant difficulty. This is an excellent little monograph and would be of value to both those working in this field and those who merely wish to become acquainted with it.

CAPT. PHILIP D. CRONEMILLER, MC, USN

ANTITHROMBOTIC THERAPY, by *Paul W. Boyles*, M.D. 131 pages; illustrated. Grune & Stratton, Inc., New York, N.Y., 1959. Price $5.

Sometimes on opening an egg it is possible without further analysis to form an accurate opinion of its quality. Opening this book to the first sentence provided a similar experience: "The literature on blood coagulation contributes little because of conflicting claims, superfluous hypotheses and varied terminology." Recollecting some fairly important contributions in this field, I took another look at the book's pedigree. The manuscript won honorable mention in the first Modern Medical Monographs Competition. The Editor-in-Chief of Modern Medical Monographs is Dr. Irving S. Wright, an outstanding authority in the field of antithrombotic therapy. The author of the book is described as "Director, Coagulation Research Laboratory, Miami Heart Institute." This all sounds good, but the book is bad. There are a number of minor sources of irritation. First off, it needs a good proofreading. In the matter of terminology, the author discarded the recommendations of the International Committee on Nomenclature of Blood Clotting Factors (Dr. Wright, Chairman) and has used instead a random mixture of terms. The graphs contain unusual, unexplained abbreviations: BAME, SGOT, TAME, TGT, OWS. There are errors of fact: on page 97, "Calcium ions are needed for all reactions of blood coagulation." There are careless inconsistencies: on page 9, the normal platelet count is 100,000 to 350,000; on page 102, it is 200,000 to 300,000. And the book is badly written: on page 63, "If a very active fibrinolytic system is present, it will lyse all of the circulating fibrinogen which could be treated with human Fraction I." These things are tolerable in a book otherwise sufficient. This one is not. Although it is a book about thrombosis, there is no description of thrombus formation or the natural history of thrombi to serve as a background for discussions of the treatment. Almost 40 percent of the book is given over to clotting and clotting tests, much of it redundant and inappropriate, yet little or no consideration is

given to the practical problems of laboratory control of antithrombotic therapy, such as the variability of thromboplastins and the normal plasma control. There is no discussion concerning the level of prothrombin activity at which a patient should be maintained. It is stated that the prothrombin time should be 25 to 30 seconds, but no reason is given for recommending this level and no mention is made that some physicians believe that less anticoagulant is advisable. The author recommends that patients about to undergo surgery be taken off anticoagulants. No reference is made to studies showing a definite reduction in morbidity when patients with a history of thromboembolism are deliberately placed on Dicumarol prior to surgery. Indeed there is no mention in the book that proper use of Dicumarol does not impair normal hemostasis. On page 38 the author describes the danger of too rapid withdrawal of anticoagulant therapy. Yet on page 20 he states, "As a precaution against unexpected bleeding, the patient should be provided with Vitamin K_1 tablets and be instructed to carry them with him at all times." When or whether the patient is to use the pills is not stated, nor is it stated how the patient by himself is to decide when the risk of rapid withdrawal is indicated. The indications for anticoagulant therapy seem somewhat broad. It is recommended, for example, on page 40 that anticoagulants should be given all patients at bed rest "in congestive heart failure or auricular fibrillation, obese, debilitated, polycythemic or anemic." The problem of thrombophlebitis and pulmonary embolism is disposed of in 11 lines. The author's enthusiasm for thrombolytic therapy seems injudicious. Some of his own experiments (figures 15 and 20) demonstrate that injections of fibrinolysin actually activated intravascular coagulation and resulted in dissemination of coronary thrombi into the terminal branches of the artery. In chapter 7 the author lists a number of serious complications of the thrombolytic agents, yet on page 20 it is stated without qualification, "In combination with anticoagulants, fibrinolysin seemingly offers an 'ideal' approach to the treatment of intravascular thrombosis." And the last sentence in the book is this: "Preliminary observations indicate that fibrinolysin administered under pressure into the root of the aorta or into the carotid artery is the most effective method for the lysis of thrombi in the coronary or cerebral arteries." In short, the book is unbalanced, uncritical, and careless. The publishers would be wise to withdraw it.

COL. WILLIAM H. CROSBY, MC, USA

NIGHT VISION, by *Gaetan E. Jayle, Albert G. Ourgaud, L. F. Baisinger*, M.D., and *William John Holmes*, M.D., with an introduction by *Sir Stewart Duke-Elder*. 408 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill, 1959. Price $13.50.

The over-all assessment of this unusually comprehensive review is best expressed in the introduction by Sir Stewart Duke-Elder: "The subject is difficult, vague, and chaotic . . . this monograph provides a critical assessment and an integrative judgment on a multitude of incompatible theories and incoordinated observations." It is not unusual in the miliatry service for a clinically oriented physician to find a research task that, by specialty interest, chance, or assignment, becomes a most important aspect of his work. Refreshing himself in background knowledge may require sifting literally hundreds of references, and his foray into the "literary jungles" can be quite discouraging. It is impressive therefore, to find a comprehensive text of such great value to the research scientist and ophthalmologist alike. The authors lead one through a maze of definitions and basic biochemical and physiologic blackground, evaluating the current opinions of many researchers, and offering concise summaries and conclusions

concerning many aspects of photopic and scotopic visual function. The final chapters cover the practical applications of voluminous theoretic data. Of particular interest to the practicing ophthalmologist is the lengthy chapter concerning pathologic variations of night vision. All readers will find the discussion of visual factors in operation of automobiles and aircraft at night both interesting and profitable. However, the description of standard runway lighting on pages 348 and 349 must be questioned. There have been many changes in standard runway lighting during recent years. One notes that no reference is made to current use of stroboscopic lighting. The lighting pattern described in the text is not believed to be currently standard, at least in the United States. This excellent reference text is recommended as a valuable source of information to ophthalmologists, physiologists, and research scientists requiring comprehensive knowledge of scotopic and mesopic visual mechanisms.

COL. RICHARD S. FIXOTT, USAF, MC

MEDIEVAL AND RENAISSANCE MEDICINE, by *Benjamin Lee Gordon*, M.D., F.I.C.S. 843 pages. Philosophical Library, Inc., New York, N.Y., 1959. Price $10.

This book was written as a continuation of the author's previous work, *Medicine Throughout Antiquity*. The narrative is a combination of the topical and biographic study of the subject. The author gives particular attention to Arabic and Jewish contributions to medicine, devoting almost a fifth of the space to these interesting fields of medical history. Some of the other subjects covered are Byzantine medicine; scholasticism; epidemic diseases; syphilis and leprosy in the Middle Ages; the progress of medicine and surgery in the countries of Western Europe; the mass hysterias; and the new developments during the sixteenth century in medicine, surgery, and the medical sciences. Brief biographies of men connected with medical advances are interspersed with the topical matter. There are explanatory notes for each chapter and an 18-page index of names.

CAPT. LOUIS H. RODDIS, MC, USN (RET.)

TRAGOEDIE DES GENIUS, by Professor *Dimu Kotsovsky*, M.D. 383 pages; illustrated. Privately printed by author, Pragerstr. 8/III, Munich, Germany, 1959.

Much has been written about mental retardation and little about the creative process of outstanding contributors to society. This book is an attempt to understand genius and the current of tragedy and frustration that seems, as the author sees it, to be an ever-present fate of those who have contributed most towards the welfare of mankind. In this respect the volume is provocative. The author explores every phase of the lives of selected geniuses such as: individuality and personality, most productive age, aging process, length of life, and environment. Every type of genius is considered in the presentation: historian, philosopher, scientist, poet, artist, dancer, and musician. A comprehensive exploration of all facets of this difficult subject, the book is well documented with tables, illustrations, and plates showing pictures of the geniuses mentioned. These include such diverse characters as: Freud, Napoleon, Gandhi, Pasternak, Tchaikovsky, and Isadora Duncan. The author shows much originality in his treatment of the subject and must be credited with some searching innovations in drawing conclusions regarding the basic nature of those persons whose sensitivity, talent, and creativeness entitle them to be called geniuses. The book is recommended for reading by anyone interested in the study of human superiority, as well as by those who have a philosophic interest in the forces that shape the lives of the great men of our time.

MAJ. THEODORE C. KAHN, USAF, MSC

THE TREATMENT OF BRONCHIAL NEOPLASMS, by *Robert R. Shaw*, M.D., and *Donald L. Paulson*, M.D., with a chapter on Bronchial Adenoma, by *John Lester Kee, Jr.*, M.D. Publication Number III, The John Alexander Monograph Series. 135 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $8.

This monograph on the treatment of bronchial neoplasms contains chapters on methods of diagnosis, selection of patients for surgery, selection of operation, irradiation therapy, chemotherapy, terminal care and results of treatment, and a section on bronchial adenoma. The brief text contains many reproductions of x-ray films, statistical charts, line drawings, and color photographs of pathologic specimens. The bibliography is adequate. The material is presented in a clear, lucid style, characteristic of these authors. Many surgeons will agree with the authors that pneumonectomy is not indicated in most cases of carcinoma of the lung and that conservation of lung tissue is most important, especially in those patients who are borderline pulmonary cripples or who have a history of cardiac disease. Many cardiac patients will survive a pneumonectomy only to die of cardiac complications shortly after operation—"the operation was a success but the patient died." Because lung cancer is now the most common internal malignant lesion encountered and because so many medical specialties are involved in its diagnosis and treatment, this book, with its complete coverage of the subject will be of interest and value to general practitioners, internists, general and thoracic surgeons, radiologists, and pathologists.

COL. SANFORD W. FRENCH, III, MC, USA

GESTATION, Transactions of the Fifth Conference, March 11, 12, and 13, 1958 Princeton, N.J., edited by *Claude A. Villee*, Ph. D. 262 pages; illustrated Josiah Macy, Jr. Foundation, New York, N.Y., 1959. Price $5.75.

For this conference, conducted and reported informally, pathologists, anatomists, comparative anatomists, veterinarians, and clinical obstetricians were selected, to present a multiple-disciplined approach and to exchange ideas on the placenta and other aspects of gestation for which they were particularly qualified. Interruptions by the participants in the form of questions, criticisms, or comments were encouraged as each participant gave the highlights of his or her research findings. This informal style contributes much to the readability of this at times highly scientific volume. Emmanuel C. Amoroso and Elizabeth M. Ramsey review most of what is new in the knowledge of placental biology and circulation—both of which subjects as presented are of practical value to the clinical obstetrician. Some observations on the venous drainage of the pregnant uterus are reported by Josef Bieniarz of Poland and several theoretic implications of this in relation to toxemia are set forth. A report by veterinarian Louis W. Holm shows an interesting and definite fetal effect on the etiology of prolonged pregnancy in certain strains of cattle—a finding that points to a possible fetal cause of prolonged pregnancy in humans and could account for the confusion now engendered by published reports on this condition in humans. A final general discussion of placental biology, physiology, and pathology by Levine, Page, Demsey, Reynolds, Hartman, Davies, and others rounds out a very interesting and informative conference. This book is recommended for reading by all interested in obstetrics in its several aspects and is indispensable reading and reference material for anyone doing research on the placenta.

CAPT. DWIGHT A. CALLAGAN, MC, USN

CHEMICALS, DRUGS AND HEALTH, by *John H. Foulger*, M.D., Ph. D. 102 pages. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $4.25.

This book, small as it is, is a well-organized and informative publication. The author, who is medical director in toxicology and forensic medicine to one of our nation's largest chemical industries, presents a brief review of the "tactical situations" encountered by a foreign chemical when it attempts to enter, or has entered, the living body. The reader is made to feel like a tourist, with the author as the experienced guide, making the rounds of a famous battlefield. We are made to see just how chemicals can enter living tissues, with special reference to the blood-brain barrier, and to those agents which can penetrate it. Then the reader is taken inside the cell and shown the protein-lipid-protein barrier which protects the true chemical factory of the living cell. A brief, but refreshing, treatment is given the subjects of enzymes, enzyme proteins, the role of proteins as catalysts, and the "poisoning" of enzymes, with clever analogies made concerning catalysts and enzymes. In discussing the fate of a foreign chemical in the body, the author reminds us of the roles played by enzymes and by high energy phosphate bonds. He then points out major targets of invading chemicals, most prominent being the liver and the kidneys, and in detail points out why these targets are seldom irreversibly injured by small quantities of foreign chemicals. The reader is then carried through a review of the symptoms resulting from the absorption of small quantities of foreign chemicals, of how different and confusing the symptoms can be, and of the role of enzymes, not only in metabolism, but in detoxification. The reader is left with a realization of the need for teamwork by the several disciplines (chemistry, biology, and physics) to cover adequately the problems posed by our chemical age.

CAPT. HOWARD C. LEIFHEIT, MSC, USA

BEHAVIORAL CHANGE IN THE CLINIC—A SYSTEMATIC APPROACH, by *Gerald R Pascal*, Ph. D. 128 pages. Grune & Stratton, Inc., New York, N.Y., 1959 Price $4.75.

To the graduate student in clinical psychology, there is an obvious schism between the content of general experimental psychology and what goes on in the psychotherapeutic situation. The essential business of helping the distressed patient in the clinic is far removed from concern with terms such as criteria, testable hypothesis, level of significance, etc., that are the soul and body of the scientific method. The author, in response to the complaints of graduate students, has attempted in this book to articulate the laboratory method and the work of the psychologic clinic. He systematically and skillfully develops his approach to behavioral change. For the limited purposes of this book the author courageously defines terms to suit his plan, glibly avoids involvement in scholarly argument and builds a system of viewing deviant behavior that will satisfy even the academic purist. Although much of the discussion is scholarly, the author effectively eliminates from consideration material not pertinent to his theme and glosses over gray areas of theory. After developing and defining the variables pertinent to behavior change, the author then demonstrates approaches to accomplishing behavior change in the clinic. The content is esoteric but well organized. Regrettably, in places the author's writing is heavy; his writing is at times muddy and frequently expansive, and sophisticated ideas are crowded into a single sentence. In some instances ideas to be clarified by example remain vague. In general, however, the book makes good sense and the author's theme is convincingly developed. This book is recommended as valuable reading for all clinical psychologists.

LT. COL. REUBEN A. BAER, USAF, MSC

THE AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS INSTRUCTIONAL COURSE LECTURES, Vol. XVI, 1959, edited by *Fred C. Reynolds*, M.D. 335 pages; illustrated. C. V. Mosby Co., St. Louis, Mo., 1959. Price $16.

The sixteenth volume of selected instructional course lectures is clearly printed on good paper, well bound, and clearly illustrated, a marked improvement over previous editions. The popularity of this volume remains assured, as illustrated by the presentation of these lectures at the 1959 American Academy of Orthopaedic Surgeons' meeting. The 124 courses were presented by 181 instructors and attended by 1,700 physicians. The material is presented in a logical and concise manner in 7 sections. These include pertinent topics relative to the hand, foot, knee, and spine. There is a valuable section dealing with current problems of unequal extremities, osteomyelitis, and electromyography. Of particular interest are the symposia on athletic injuries and the treatment of femoral neck fractures with replacement prostheses. The various sections have been written by authorities with wide experience, and most of the views are dogmatic. This is a valuable work of reference for the orthopedic surgeon as well as for the resident in training. The editor should be commended for presenting the material in an orderly and easily digestible manner.

COL. EARL W. BRANNON, USAF, MC

THE YEAR BOOK OF OBSTETRICS AND GYNECOLOGY (1959–1960 Year Book Series), edited by *J. P. Greenhill*, B.S., M.D., F.A.C.S., F.I.C.S. (Honorary). 573 pages; illustrated. Year Book Publishers, Inc., Chicago, Ill., 1959. Price $8.

This edition of the 1959–1960 Yearbook of Obstetrics and Gynecology is, as were its predecessors, a most valuable reference guide as well as an abstracted compilation of the "meat" of the problems confronting the clinician in his day to day practice. Although the emphasis is on the major procedures, the minor ones are not neglected. The footnotes by the editor, with their concise and succulent comments, are presented without verbosity but with clarity and logic. The yearbook is invaluable to the specialist, as well as to the general practitioner, resident, and intern.

CAPT. HENRY J. HUNTER, MC, USN

TRIFLUOPERAZINE, Further Clinical and Laboratory Studies. Twenty-one original reports with an introduction by *John H. Moyer*, M.D. 191 pages. Lea & Febiger, Philadelphia, Pa., 1959. Price $3.50.

This text consists of a number of reports on the various uses of trifluoperazine in psychoneurotic illness, chronic schizophrenia, alcoholic hallucinosis, tensional gastrointestinal disorders, menopausal syndromes, and management of hyperactive children, and as an antiemetic. The rest of the text deals with the pharmacology, excretion, and toxic symptoms of the drug. The excellent introduction by John Moyer fairly well summarizes the contents. The chapters on the use of the drug in the treatment of psychoneurosis and psychosis to me are unconvincing because of the vague statements as to what the various authors meant by improvement of their patients. Of great interest and well documented were the excellent results obtained in the use of the drug in improving the behavior of hyperactive retarded children without the usual tranquilizing sedation. Also of value is the fact that it seems to be a more effective drug as an antiemetic than was thorazine and that it does not cause drowsiness. The chapter on toxic reactions is excellently written and is quite convincing in that the authors are dealing with large series of cases, rendering the figures on the percentage of toxic reactions valuable. This book is an excellent reference for the physician who uses trifluoperazine in his office practice.

MAJ. EUGENE W. EBERLIN, MC, USA

RHEUMATIC FEVER, Epidemiology and Prevention. The Proceedings of a Seminar Held at the International Children's Centre, Paris, 25–27 September 1956, edited by *R. Cruickshank*, M.D., Ch. B., F.R.C.P., D.P.H., and *A. A. Glynn*, M.B., B.S., M.R.C.P. 193 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $5.50.

This well-bound book comprises 193 pages in 4 parts, written by numerous international specialists in this field. Many illustrative tables are included. Part I deals with the bacteriology and immunology of group A hemolytic streptococci, the isolation or identification of this organism, and the nature of antibodies to it, including antistreptolysin O and antienzyme antibodies. Part II covers the epidemiology of infections with group A hemolytic streptococci in different parts of the world. Part III discusses the particular epidemiology of rheumatic fever. In this section are covered the relationship between this organism and rheumatic fever; criteria of reactivity, including antistreptolysin O titer; antihyaluronidases; epidemiology in children; factors related to focal infection; and bone marrow changes in streptococcic disease. In addition, precipitin tests for streptococci are described along with various sociologic, geographic, and miscellaneous factors in the cause or distribution of rheumatic fever. Part IV is concerned with the prevention of rheumatic fever. Dr. Maxwell Finland discusses chemotherapy in relation to this disease, including the antibiotic spectrums of the streptococci in general. Other authors cover the use and dosage of various specific antibacterial agents in prevention of rheumatic fever, with statistical tables showing the results of prophylactic therapy. The complications of drug therapy are noted for each type of therapeutic agent. Individual and mass prevention of initial rheumatic fever is discussed. In summary, Dr. D. D. Rutstein and others review the practical aspects of available knowledge in the prevention of rheumatic fever. Appendix 1 lists the modified Jones criteria for the diagnosis of this disease. This concise little book summarizes the proceedings of a seminar on rheumatic fever held in Paris, France, in September 1956. It is well printed on nonglossy paper and is a valuable source book for those interested in the subject. Both known fact and theory are covered. It is easily readable and is recommended for reference. COL. BYRON A. NICHOL, MC, USA

THE EMERGENCY SYNDROMES IN PEDIATRIC PRACTICE, by *Alfred J. Vignec*, M.D. 382 pages; illustrated. Landsberger Medical Books, Inc., New York N.Y., 1959. Price $9.90.

This is a good book for some groups in medicine, but I am not exactly sure which ones. It is the sort of book that any topnotch pediatrician might dictate to his secretary on dull, rainy afternoons. It is, however, refreshing to have one doctor be explicit about the common emergency syndromes and how he personally recommends that they be handled. Since most well-trained pediatricians have their own ideas on all these subjects, they will find it interesting to compare, their own views with those of the author but will find little that they should not already know. The book is not complete enough to serve as a medical school text. I believe that it would be a very useful book for outpatient clinics and pediatric wards that do not have their own standard operating procedures for handling the emergency syndromes included in this book. It is not just another compendium of information intended to be carried in the intern's pocket. Since it is lucidly written and since the problems are simply stated, it would be a brief and explicit source of information for pediatric nurses, who could understand what the doctor was trying to accomplish. COL. LEO J. GEPPERT, MC, USA

CHILD RESEARCH IN PSYCHOPHARMACOLOGY, organized and edited by *Seymour Fisher*, Ph. D., with a foreword by *R. H. Felix*, M.D. 216 pages. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $6.50.

This book is based upon 8 formal papers presented at a conference on child research in psychopharmacology held in 1958 by the Psychopharmacology Service Center of the National Institute of Mental Health. The papers were presented and discussed by psychiatrists, psychologists, pharmacologists, and social workers, and they covered such topics as primary research requirements, the technical and ethical pros and cons of doing such research on children, theoretic and methodologic considerations, and the advantages inherent in large-scale interdisciplinary study programs. The book is low on factual content, but many of the issues raised are stimulating and worthy of careful study by scientists and physicians who are concerned in any way with the modification of behavior by drugs. The most useful part of the book is a series of 159 abstracts of research papers on child psychopharmacology.

LT. COL. ROBERT B. PAYNE, USAF, MSC

PYELONEPHRITIS, by *Fletcher H. Colby*, M.D. 214 pages; illustrated. Williams & Wilkins Co., Baltimore, Md., 1959. Price $7.50.

This book presents a thorough and timely evaluation of pyelonephritis, a disease that constitutes one of the most important problems facing the medical profession today. It contains sections on renal physiology, renal anatomy, and the general aspects of both acute and chronic pyelonephritis, as well as sections related to the additional problems encountered in childhood and infancy, diabetes, pregnancy, and the relationship of chronic pyelonephritis to hypertension. It is written in a clear, concise manner and contains many excellent tables, illustrations, and case histories. In his book, Dr. Colby offers an outstanding presentation of present-day diagnostic methods and treatment modalities. This includes discussion of the very latest in both, such as the new chemotherapeutic agents, renal biopsy and renal angiography. Though written by a urologist, this book is one that can be read and understood by every member of the medical profession, be he student, general practitioner, or specialist.

CAPT. MARK S. CURTIS, MC, USN

LYMPHOCYTES AND MAST CELLS, by *Margaret A. Kelsall*, B.A., M.A., Ph. D., and *Edward D. Crabb*, B.A., M.A., Ph. D. 399 pages. Williams & Wilkins Co., Baltimore, Md., 1959. Price $8.

This book contains the accumulated evidence from the literature of the role of free or independent cells, with particular reference to mast cells, lymphocytes, and plasmacytes, in intermediary metabolism. The authors look upon the lymphocyte as a specialized cell whose function is to synthesize, store, and transport nucleoprotein for maintenance, growth, or secretion by other cells. The plasmacyte is presented as a cell that synthesizes and stores ribonucleic acid and gamma globulin instead of just having the function of antibody formation. Their concept of the significance of the mast cell is that it has the ability to synthesize, store, and release histamine and heparin as well as produce mucopolysaccharide. The authors are to be commended for their painstaking search of the literature (1,142 references cited) for material to support the concept that certain living cells function in the nutrition of other cells. The proof of this function is difficult and at the moment largely unsolved. This, however, does not detract from the worth of the book as a primary source of very useful information on cellular physiology.

LT. COL. JOSEPH H. AKEROYD, MSC, USA

New Books

Books received by the U.S. Armed Forces Medical Journal *are listed in this department for the information of readers, and as acknowledgment and appreciation of their receipt from the publishers. Those of greatest interest will be selected for review in a subsequent number of the* Journal.

Encyclopedia of Medical Syndromes, by *Robert H. Durham*, M.D., F.A.C.P., with a foreword by *T. R. Harrison*, M.D. 628 pages. Paul B. Hoeber, Inc., New York, N.Y., 1960. Price $13.50.

Diagnostic Radioisotopes, by *Charles A. Owen, Jr.*, M.D., Ph. D. (Med.). 425 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $15.75.

Memory and Hypnotic Age Regression, Developmental Aspects of Cognitive Function Explored Through Hypnosis, by *Robert Reiff*, Ph. D. and *Martin Sheerer*, Ph. D. 253 pages. International Universities Press, Inc., New York, N.Y., 1959. Price $5.

Hypnosis and Related States, Psychoanalytic Studies in Regression, by *Merton M. Gill*, M.D., and *Margaret Brenman*, Ph. D. 405 pages. International Universities Press, Inc., New York, N.Y., 1959. Price $7.50.

The Fluids of Parenteral Body Cavities, by *Paul D. Hoeprich*, M.D., and *John R. Ward*, M.D. 98 pages; illustrated. Grune & Stratton, Inc., New York, N.Y., 1959. Price $4.75.

Handbook of Circulation, edited by *Dorothy S. Dittmer* and *Rudolph M. Grebe*. Analysis and compilation by *Philip L. Altman*. 393 pages; illustrated. W. B Saunders Co., Philadelphia, Pa., 1959. Price $7.50.

Workbook for Practical Nurses, by *Audrey Latshaw Sutton*, R.N. 346 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1959. Price $3.50.

Metabolic Care of the Surgical Patient, by *Francis D. Moore*, M.D., and illustrated by *Mildred Codding*, A.B., M.A. 1,011 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1959. Price $20.

Current Drug Handbook, 1959–1960, by *Mary W. Falconer*, R.N., M.A., and *H. Robert Patterson*, B.S., M.S., Pharm. D. 161 pages. W. B. Saunders Co., Philadelphia, Pa., 1959. Price $2.75.

Biopsy Manual, by *James D. Hardy*, M.D., *James C. Griffin, Jr.*, M.D., and *Jorge A. Rodriguez*, M.D., 150 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1959. Price $6.50.

A Textbook of X-Ray Diagnosis, Volume IV, edited by *S. Cochrane Shanks*, C.B.E., M.D., F.R.C.P., F.F.R., and *Peter Kerley*, C.V.O., C.B.E., M.D., F.R.C.P., D.M.R.E. 3d edition. 714 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1959. Price $21.

Therapeutic Nutrition With Tube Feeding, by *Morton D. Pareira*, M.D. 58 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $3.75.

Trifluoperazine, Further Clinical and Laboratory Studies. Twenty-one original reports with an introduction by *John H. Moyer*, M.D. 191 pages. Lea & Febiger, Philadelphia, Pa., 1959. Price $3.50.

THE EMERGENCY SYNDROMES IN PEDIATRIC PRACTICE, by *Alfred J. Vignec*, M.D. 382 pages; illustrated. Landsberger Medical Books, Inc., New York, N.Y., 1959. Price $9.90.

LECTURES ON THE INTERPRETATION OF PAIN IN ORTHOPEDIC PRACTICE, by *Arthur Steindler*, M.D. (hon), F.R.C.S. (Eng); (hon) F.R.S.M. (Eng); F.A.C.S.; (hon) F.I.C.S., with anatomical dissections by Dr. *Rodolfo Cosentino*. 733 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $18.50.

DISTURBANCES IN GASTROINTESTINAL MOTILITY, Diarrhea, Constipation and Biliary Dysfunction, edited by *J. Alfred Rider*, M.D., Ph. D., and *Hugo C. Moeller*, M.D., Ph. D. 387 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $13.

THE SURGICAL TREATMENT OF SCOLIOSIS, by *Louis A. Goldstein*, M.D., F.A.C.S. Appendix: Anesthesia in Scoliosis, by *D. Vernon Thomas*, M.B., F.F.A.R.C. 116 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1959. Price $6.75.

THE ACUTE MEDICAL SYNDROMES AND EMERGENCIES, Diagnosis and Treatment, by *Albert Salisbury Hyman*, M.D., with the collaboration of *Samuel Weiss*, M.D., *George Guttman Ornstein*, M.D., *Howard F. Root*, M.D., *Anna Ruth Spiegelman*, M.D., and *Jack Abry*, M.R. 442 pages; illustrated. Landsberger Medical Books, Inc., New York, N.Y., 1959. Price $8.75.

CLINICAL NEUROSURGERY, Proceedings of the Congress of Neurological Surgeons, San Fransisco, Calif., 1958. 289 pages; illustrated. Williams & Wilkins Co., Baltimore, Md., 1959. Price $11.

ATLAS OF ROENTGENOGRAPHIC POSITIONS, Volumes I and II, by *Vinita Merrill*. 2d edition. 636 pages; illustrated. C. V. Mosby Company, St. Louis, Mo., 1959. Price $32.50.

SYMPOSIUM ON GLAUCOMA, edited by *William B. Clark*, M.D., F.A.C.S. Associate editor, *Joe M. Carmichael*, M.D.J. 314 pages; illustrated. C. V. Mosby Co., St. Louis, Mo., 1959. Price $13.50.

PSYCHOPATHY, A Comparative Analysis of Clinical Pictures, by *Carl Frankenstein*, Ph.D. 198 pages. Grune & Stratton, Inc., New York, N.Y., 1959. Price $6.75.

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